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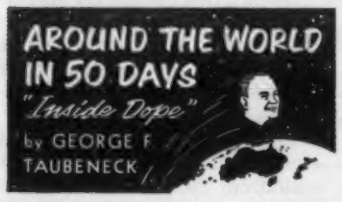

Story of the Week
RAIN; No War Today
Comic Opera Riots
Frigidaire Is Enviable In France
Commercial Refrigeration In France
At Long Last, HEATING
Household Refrigeration Going Well
Wall-Hangers Go Great

Story of the Week

Wearing a theatrical black patch over one eye, flamboyant Floyd Gibbons roamed the world in the 1920's and 1930's as a foreign correspondent for American newspapers. Gibbons looked for trouble everywhere. If little or none existed, he made headlines anyway.

When the Japanese invaded China midway between World Wars One and Two, Gibbons landed in Shanghai. On the first day he sent back a dispatch with the immortal lead: "I am in a rowboat."

Nothing more was heard from Floyd for 10 days. Alarmed, his syndicate editor in New York queried the Associated Press man stationed in Shanghai as to what had happened to his star. Came the cabled reply:

"Gibbons in Cathay bar. Shall we cover?"

RAIN; No War Today

During the course of this trip we've landed in several places where, if you read the foreign correspondents, you'd assume danger might be present. Indonesia, Thailand, Lebanon, France, for example, are presumed to be in dangerous political turmoil.

Gentlemen, please take the word of a candid eyewitness. There's more action on a Saturday night at many an American drive-in hamburger joint.

What we read in newspapers about goings-on in these troubled countries, and what actually happened, seem to be two different things. Floyd Gibbons must have left some, er, emulators around who also cover "foreign intrigue" from bars.

If this be war, we're in favor of it; because hardly anybody gets hurt. Danger? There's far more on an American highway any day or night in the week.

Comic Opera Riots

Take the so-called riots in Paris. "Dope" was there at the time. He saw them, and even participated in one just for kicks. They were advertised in advance, you know. "Demon-

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How Are Cooling Sales Shaping Up?

Big Equipment Selling Best

DETROIT—Sales picture in the air conditioning industry, as the half-way point in the year nears, seems to line up as a struggle on the industry's part to hold the momentum tending to increased sales that has been generated by increased public acceptance, against the retarding forces of cool weather in heavily populated areas plus current economic conditions.

The general sales picture varies widely by type of product and geographical areas, but the over-all situation currently is about like this:

Sales of commercial and residential unitary equipment at both the manufacturer and retail levels were reasonably good through May. June, however, has failed thus far to come up to the peaks which are usually realized in this month.

Installation of, and orders for, big equipment has been a bright spot. This segment of the industry might help hold up the over-all

(Concluded on Page 4, Col. 3)

Wampler Sees $3 Billion Year

SYRACUSE, N. Y.—"Total retail sales volume in air conditioning for the present year should amount to about $3 billion, close to the 1957 level," was the prediction made by Cloud Wampler, board chairman and chief executive officer of Carrier Corp., during a recent press conference here.

"Reports to date indicate that things are going rather well," the Carrier executive stated. "For example, room air conditioner sales at retail for the industry are reported to be up about 10% over last year. Our estimate is that between 1,600,000 and 1,700,000 will be sold during 1958.

"The market for central air conditioning of residences is still somewhat uncertain.

"However, new down payment provisions and easier mortage money should have a stimulating effect upon home construction, and the recent FHA policy statement advising its field organization to encourage the air

(Concluded on Page 10, Col. 3)

NWAHACA's Silver Shield Program Ready

Better Installations Seen as Boon to Mfrs., Consumers, Contractors

CLEVELAND — The "Silver Shield Program" of the warm air heating and air conditioning industry is now ready for action.

News of this event was recently released to the industry's trade press by the National Warm Air Heating & Air Conditioning Association, developer of the program, with the announcement that the association's board of trustees authorized immediate activation of the program at its semiannual meeting in Cleveland on June 5.

The basic idea for the Silver Shield Program was presented to the industry by the association at its annual convention in Chicago last November.

"Industry response was immediate and overwhelming, with scores of local industry organizations demonstrating an enthusiastic interest in getting going with the program immediately," NWAHACA stated.

"However, it has required concentrated work by the association's staff during the past six months to shape the plan into an operating program which is now completed and ready for

(Concluded on Page 11, Col. 1)

Settle Minneapolis Jurisdictional Row On Setting Up Cases

MINNEAPOLIS—Differences over who should set up refrigerated cases in supermarkets, carpenters or refrigeration mechanics, were settled here recently.

An agreement signed by representatives of the Twin Cities Carpenters District Council and St. Paul Local 455 and Minneapolis Local 539 of the United Association presumably ends a seven-year long jurisdictional squabble between carpenters and pipefitters that has caused local contractors considerable trouble.

The agreement applies to installation of refrigerated cases, refrigerators, wooden cooling towers, and walk-in coolers installed in supermarkets, department stores, and food stores within the jurisdiction of these locals.

It specifies that the unloading, handling, and removing of crates and moving into the store of add-a-unit and/or in-line refrigerator cases is the work of the United Brotherhood of Carpenters and Joiners of America.

"From that point on," the agreement says, "the handling, removing of skids, lining, leveling, and making the moisture-proof joints as well as all piping

(Concluded on Page 29, Col. 4)

Bell Heads 2 Janitrol Divs.

COLUMBUS, Ohio—Election of Robin A. Bell as president of the two Janitrol divisions in Columbus, and executive vice president of Surface Combustion Corp., was announced by W. Alton Jones, chairman of the board.

Henry M. Heyn of Toledo was elected president of the cor-

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In Many Areas

NCRSA Members See Pick-Up

ATLANTIC CITY, N. J.—A very marked pick-up in business that may make 1958 the equal of 1957 in many areas of the country was reported by some commercial refrigeration equipment distributors attending a mid-year meeting of officers, directors, and advisory board members of the National Commercial Refrigerator Sales Association here recently.

"Business is there if you go after it" was the general feeling of those attending, according to Marie Lawton, NCRSA executive secretary.

Diversification of lines, concentration on service, keeping hard after the sales force, as well as alert to local trends and business opportunities has enabled board members to keep their business at high levels despite fall-offs in other industries, she reported.

While in some areas new

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Marco Resumes Output Following Picket Ban

WOMELSDORF, Pa. — Production has been resumed at Marco Industries, Inc. here, manufacturer of motors used in the air conditioning and refrigeration industries, following the issuance of an injunction and an enforcement order by a circuit judge against picketing by a group of striking employes, company officials report.

The strike had been called several weeks ago by the United Steel Workers Union, and ef-

(Concluded on Page 29, Col. 1)

Controls of America Acquires Redmond

SCHILLER PARK, Ill.—Controls Co. of America last week announced the acquisition of Redmond Co., Inc., of Owosso, Mich., and Redmond Motors, Ltd., of St. Thomas, Ont., Can., through purchase of their inventories, tooling, patents, and trademarks for approximately $1,715,000, and the leasing of plants, equipment, and other fixed assets.

Louis Putze, Controls Co. president, said rental of Redmond's five U. S. plants and their equipment would be $220,000 annually for 10 years, with an option to buy these assets at the end of the lease period for $500,000. The Canadian plant will be leased for one year, he said.

The acquisition will be financed with $2,350,000 of long-term funds repayable over a 15-year period to the Northwestern Mutual Life Insurance Co., the Marshall & Ilsley Bank, Milwaukee, and the Harris Trust & Savings Bank of Chicago. In addition, Putze said, short-term borrowing may be required at times to finance peak receivables and inventories.

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WORKS: READING, PA.

Detroit Raises Permit Fee Schedules To Cover 25% Rise In Costs over 2 Years

DETROIT — Strapped by a 25% rise in costs over the past two years, the City of Detroit is raising its permit fee schedules effective July 1, E. S. Lustofin, chief of the bureau of licenses and permits, announces.

Lustofin said, however, that he does not expect that the higher fee schedules will be applied until after all contractors have been notified, which may take until July 15.

Permit fees for refrigeration units of 1 to 5 hp. will be raised from $5 to $8, for units over 5 hp. and not over 50 hp. from $10 to $15, and for units over 50 hp. from $20 to $25.

Fee for special or shop inspection of refrigeration equipment will be raised from $10 to $20 per unit per visit. All other refrigeration fees will remain as they are.

Installation fee for oil burners other than room heaters will be upped from $5 to $7. Fees for underground tanks make advances of from $3 to $25, depending on size.

For gas fired space heating equipment, permit fee for installation or replacement of burners not exceeding 500,000 B.t.u.h. input rises from $8 to $10 and larger ones from $12 to $20.

Alteration fees and preliminary inspection fees are unchanged.

Lustofin said that all contractor organizations were notified of the planned fee changes and none offered serious objections.

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Why lose dollar-making storage and selling space to house compressors, when you can now use the Kramer Outdoor Compressor? The THERMOBANK COMPRESSOR SYSTEM is factory assembled, tested and run-in; it saves installation time and money.

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WRITE FOR BULLETIN TC 406A

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45 YEARS OF CONTINUOUS ACHIEVEMENT IN HEAT TRANSFER

Heat To Continue In South, and Southwest During Next 30 Days

WASHINGTON, D. C.—Continued hot weather in the South and West, with "much above normal" temperatures in parts of the Southwest and on the Pacific Coast, and cooler than normal temperatures in the northeastern quarter of the nation, is the U. S. Weather Bureau's 30-day outlook for mid-June to mid-July.

The hottest parts of the nation will be in parts of Texas, New Mexico, Arizona, and the California Coastal region, and the Pacific Northwest. Coolest part will be in the central Great Lakes region, says the Weather Bureau. Near normal temperatures will prevail in the Eastern Plains states and the Border states.

NEMA Reports April Freezer Sales Rise

NEW YORK CITY—The National Electrical Manufacturers Association reported that total industry sales, including exports, of farm and home freezers in April amounted to 79,300, up from the 70,900 sold in the like 1957 month.

Freezer sales for the first four months of the year, however, were down from the corresponding year-ago period, totaling 284,200 as compared with 294,100.

April sales of household refrigerators amounted to 210,800 as compared with 281,600 in the same month of 1957. For the first four months of 1958, refrigerator sales totaled 905,800, off from the 1,195,000 of the like 1957 period.

The Case of the $100,000 Drip

LINCOLN, Ill.—Because she allegedly suffered permanent injuries when she slipped on water that had dripped from an air conditioner in the Abe Lincoln Coffee Shop here, Mrs. Helen M. Hulse has filed suit for $100,000 damages from Meyer Furnace Co. and William G. Lessen of Lincoln.

Mrs. Hulse alleges that the unit was improperly installed.

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R. A. BELL

H. M. HEYN

Bell Elected--

(Concluded from Page 1, Col. 2)

poration, succeeding Frank H. Adams who died on Easter Sunday.

Heyn was also elected president of the Industrial Div. located in Toledo.

Jones announced the election of James P. Farrell, of New York City, a member of the board, as its vice president and Albert J. Buckenmyer of Toledo, secretary and treasurer of the corporation, as a member of the board.

Bell has been a director and vice president of the corporation as well as general manager of all Columbus operations. These include the Janitrol Heating & Air Conditioning Div., at 400 Dublin Ave.; Janitrol Aircraft Div., at 4200 Surface Rd.; and Kathabar Div. Mfg., at 401 Dublin Ave.

Bell was associated with the original Columbus Heating & Ventilating Co. while attending Ohio State university. The gas heating division of the company was acquired by Surface Combustion Corp. in 1931 and Bell moved to Toledo as equipment design and application engineer.

During his career with the corporation, Bell has served as branch manager in Rochester, N. Y., eastern regional manager in New York City, and general manager of the two Janitrol divisions.

Air Conditioning Sales Outlook--

(Concluded from Page 1, Col. 2)

dollar volume.

Room cooler sales as usual have pretty much followed the weather picture. In the South, Southwest, and Far West, where hot weather has held for weeks at a time, sales have been good, and scarcities have begun to show, particularly in the larger sizes. In most of the metropolitan areas in the North, the "selling season" has hardly got under way, because of a lack of any sustained hot weather. However, there is a feeling that if hot weather arrives before too late, retail movement might be good, based on the general improvement in appliance sales in May and June.

"Movement of our products into retailers' hands (considered a reasonably fair index of retail sales) in May was generally satisfactory, showing a good increase over April, although not quite hitting the peak we looked for," said an Airtemp official.

"However, June sales thus far have not shown much of a tendency to pull ahead of May figures, as they usually do.

Big Equipment Back Orders Continue To Grow

"In the equipment for larger sizes, improvement has been noted generally throughout the year thus far, and our backlog for such products continues to grow."

(Other manufacturers such as Carrier, York, and Trane have echoed this optimistic picture on the larger installations.)

Sales of its commercial and residential units had been "splendid, in some instances running 20% ahead of last year" through May, said an official of York Div., Borg-Warner Corp., but a softening of the market has been noted in June. There have been increasing complaints of price cutting and "wild promotions," said this official.

Carrier Corp. officials at a recent press conference, said that sales of unitary equipment had held up well through May, with improvement shown in the South and Southwest. The Northeast section of the country has been something of a soft spot.

Room cooler producers, reflecting some of the improvement shown because of early hot weather in the southern part of the country, were quite optimistic early this month, but by the time of the opening of mid-summer Marts in Chicago, had tempered their optimism somewhat.

Paul M. Augenstein, head of General Electric's room air conditioner department, reported earlier this month that demand "was severely taxing the capacity of our Louisville plant." He stated that the company's 1957 carryover was almost exhausted in southern areas.

Other optimistic reports recently were by Edward Becker, Fedders-Quigan sales manager, who said that May factory sales were the second highest for any month on record; C. W. Paulson, Westinghouse room air conditioner manager, who said production of room units was planned to continue on a six-day week through July 10; and Jack Cherry, head of Philco's department, who reported that his sales in the first five months of the year were 25% higher than in 1957.

Some Not So Optimistic

But at the opening of the Marts in Chicago, a G-E headquarters representative said total sales might do well to hit the '57 level, and representatives of Mitchell and Gibson saw modest increases, if any, over the '57 figures.

Reports from individual outlets indicated the effects of local weather and economic conditions:

Sales this year are well above those at the same time last year, declared Ted Fahnestock of Fahnestock's, Inc., Wichita. A spell of 100° F. weather a few weeks ago definitely spurred sales, though the threat of tornadoes and rain now is hindering both sales and installations.

In Washington, D. C., Robert Carlton of Wilson Supply Co., found air conditioning business across the board about 15 to 20% behind last year.

Government sales, involving commercial packaged units, has been good, however, he added.

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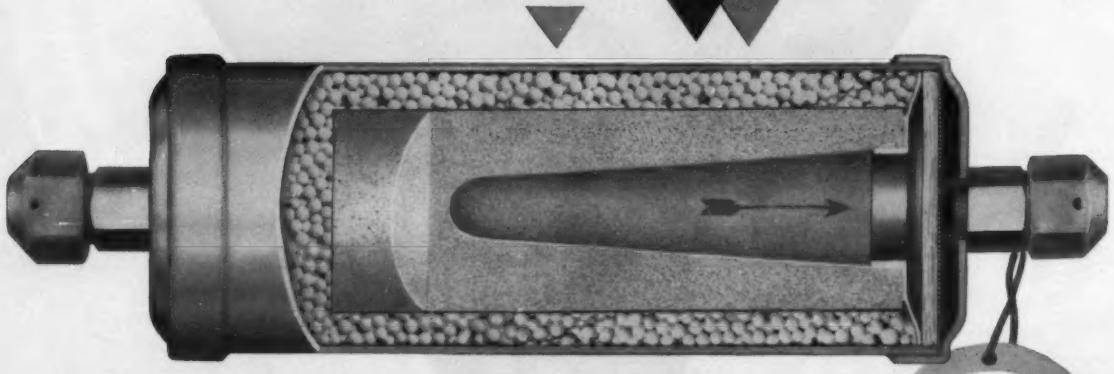

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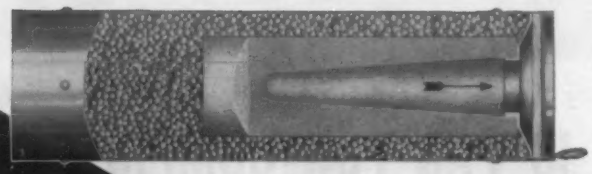

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Proper Installation: *Leveling, Proper Drainage, Careful Wiring, Balancing Can Cut Servicing*

TORONTO, Ont., Can.—"The amount and kind of service required by a refrigeration system is dependent in large part on the thoroughness and adherence to sound refrigeration practices of the installing contractor.

"For this reason, it is logical to treat installation and servicing as a single subject," according to Parker V. Phillips, service manager of Hussmann Refrigerator Co. of Canada. Speaking on "Installation and Servicing of Low Temperature Self-Service Equipment" at the 19th annual convention of the Canadian Refrigeration Service Engineers Society, Phillips added that "sometimes good basic principles are overlooked in as simple an operation as installing a fixture.

Leveling Improves Operation

"A simple thing like leveling the fixtures is far too often overlooked, as an example. Appearance is not the only consideration in leveling; most units will operate better when perfectly level and free from outside mechanical stress and strains. Improper sealing, and resultant sweating, are sometimes the result of improper leveling.

"Drainage should be considered—large enough openings, correct pitch to the lines (1 in. to every 10 ft.), traps, and the like.

"All plumbing should comply with prevailing codes.

"Electrical wiring should be done carefully. For example, 115-volt supply required for system components which must operate continuously must be separate from store lighting or case switching circuits, since these can be turned off at night. The switches controlling such circuits should be locked or guarded against unauthorized turn-off."

Turning from the installation of fixtures to the installation of low temperature self-service equipment, Phillips stressed the prime importance of system balance. The condensing unit must be balanced with the fixtures or coils, he warned, and every equipment manufacturer has set up data which specifies the requirements for system balance.

Adequate Ventilation Of Condensing Unit

Next to be considered is unit location; whether the unit is water cooled, air cooled, or air-water cooled, adequate ventilation of the condensing unit is necessary for satisfactory operation. For air cooled or air-water cooled, the minimum air flow should be 750 c.f.m. per horsepower; for water cooled or for remote air cooled, the requirement is 100 c.f.m.

"When we consider piping," he continued, "oversizing is not nearly as harmful as undersizing. The effect of oversizing is mainly the need for more refrigerant. In short line runs, this merely means a few more pounds, but in long line runs, it may mean the difference between having and not having sufficient receiver capacity.

"Undersizing of lines, on the other hand, affects the system just as much as the undersizing the condensing unit. If the liquid line is undersized, inadequate liquid is available at the valve. This results in starving the coil. Since only part of the coil is then active, the rest of it serves only as an extension to the suction line. The suction pressure drops and with it the temperature and velocity of that portion of coil being used.

"In addition to these problems, the superheat is increased, not only in the coil but in the entrance to the compressor. Along with the reduced suction pressure, this serves to reduce the over-all condensing unit capacity," he said.

"In suction lines, oversizing is fully as harmful as undersizing," he continued. "The undersizing of suction lines creates a pressure drop and reduces capacity. The major result of oversizing suction lines is poor oil return and consequently reduced compressor life. This is particularly true in risers, where the reduced velocity due to oversizing makes it impossible for the gas to move the oil as it should.

"Ideally, all suction lines should be graded toward the condensing unit, but this is not always possible in practice.

"Suction line velocities should be from 750 to 1,000 f.p.m. in horizontal runs," according to Phillips, 1,500 to 2,000 f.p.m. in vertical runs for both Refrigerant-12 and 22 systems. In addition to maintaining these velocities, traps should be installed in all vertical risers exceeding 5 ft. in height.

"The suction lines from open, self-serve low temperature equipment must be insulated. The prime purpose of such insulation is not to prevent sweating or frosting of the suction line, but to allow maximum coil capacity, which in turn means maximum machine capacity, lower discharge temperatures, and longer compressor life. Failure to insulate the suction line on low temperature equipment is asking for trouble," warned Phillips.

He held that the final evacuation, testing, and charging of a unit is equally as important as the physical installation of the equipment.

In testing for leaks, he said, remove expansion valves and controls which may be damaged by high pressures. Charge the unit with refrigerant and increase the pressure with dry nitrogen to 250-300 p.s.i. Then use the halide leak detector.

Phillips recommended evacuation as the best method to dehydrate a system. On this matter he said, "The vacuum which can be read in inches of mercury on a compound gauge is neither satisfactory nor effective. Therefore a high vacuum pump must be used and the vacuum reached should be on the order of 0.5 millimeters. This is about 29.901 inches.

"At this point, the boiling point—or rather the sublimation point of water, for it is ice at this point—is -11° F.

"Refrigerant must be introduced through a drier.

"No service should be attempted on low temperature equipment without previous analysis. Many conditions require careful analysis before action is begun. In this respect, it is unwise to consider the evaporator and case as one item and the condensing unit as another.

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Jack Lefman
Brook Pork Center, Inc., Bronx, N.Y.

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Grinding for Battle

Gas Utilities Sharpen Sales Swords For Big Whack at Air Conditioning

By George M. Hanning

DETROIT—Watch out, you purveyors of electric air conditioning! You may run into some stiff competition from an unexpected source!

Gas utilities are getting roused over their piddling share of the market. They are learning what gas air conditioning can mean to them and why they must have it. Now, they are out to get it.

"During the five summer months of 1957," R. A. Puryear, Jr., president of Alabama Power Co., reported to company stockholders, "we operated at a loss of $1.5 million before taxes.

"Studies show that if there had been 26,000 gas-fired air conditioners operating in our territory, the deficit would have been wiped out and over $700,000 would have been added to our annual net."

Milton Elert, sales training and promotion director for the Michigan Consolidated Gas Co. serving Detroit, admitted, "What air conditioning business we got in the past has been more or less by accident. Now we are interested in anything that will sell gas in summer."

W. W. Selzer, chairman of the air conditioning committee of the American Gas Association, showed straight-faced concern over the problem that electric utilities were having with high summer peaks—"indigestion brought on by air conditioning," he termed it.

He pledged that the gas utilities would work hard to help them keep that electric peak down. But, he admitted to very selfish motives.

"Utilities with high peaks in summer will stop at nothing to even out the load over the year," he reasoned. That would hit the gas utilities right in the middle of their growing heating business.

Electric utilities are already pushing electric heating with "surprising success," he told other gas utility officials.

All-Electric Home Is Worrisome

Marion Pierce, air conditioning manager of the Ohio Fuel Gas Co., put it another way.

"Those summer valleys (in gas volume) don't worry us too much. We need the storage space.

"But when they start putting in all-electric homes. That's what worries us."

Selzer told the NEWS that in the last six months he has visited 25 gas utilities to give them the story of gas air conditioning.

"Most interest in air conditioning is picking up in the Southwest; in the Pennsylvania, West Virginia, Ohio belt; and in New England, where only a year ago they wouldn't admit that they needed air conditioning," he said.

W. G. Wepfer, general sales manager for Arkla Air Conditioning Corp., manufacturer of the "Arkla-Servel" gas air conditioner, reported that 75 gas utilities are currently active in air conditioning (they are buying units) and 150 are interested.

"We get the bulk of our business from the south and southwest," he said. "We get some from the east. Because utilities there could not get enough gas to sell, we have been weakest in the midwestern area—Illinois through Michigan. But we expect that condition to be cleared up in another year."

Gas utility people figure that the electric utility's summer "indigestion" gives them a competitive advantage this year they can well exploit.

While the electrics are operating at peak capacity and must invest in more equipment to handle additional load, gas utilities can handle all the air conditioning they can sell without "one cent in additional capital investment."

Admitting the need and advantages gas air conditioning would bring, how are the utilities planning to sell it?

"It'll take some pioneering," admits A.G.A.'s Selzer.

Gas people concede that they are faced with two major problems in selling their product.

1. The public doesn't even know gas air conditioning exists and gas sales people are only little better informed.

2. It costs more to buy—considerably more in smaller sizes—than the electric product.

To solve these problems, the gas utilities, both collectively and individually are taking vigorous steps.

Take the first problem of education.

Collectively, the American Gas Association will spend $260,000 on advertising to promote gas air conditioning this year. Forty full pages of advertising are being scheduled in "shelter" magazines.

According to Selzer, manufacturers are putting up about $130,000 in cooperative advertising funds, particularly in the residential field.

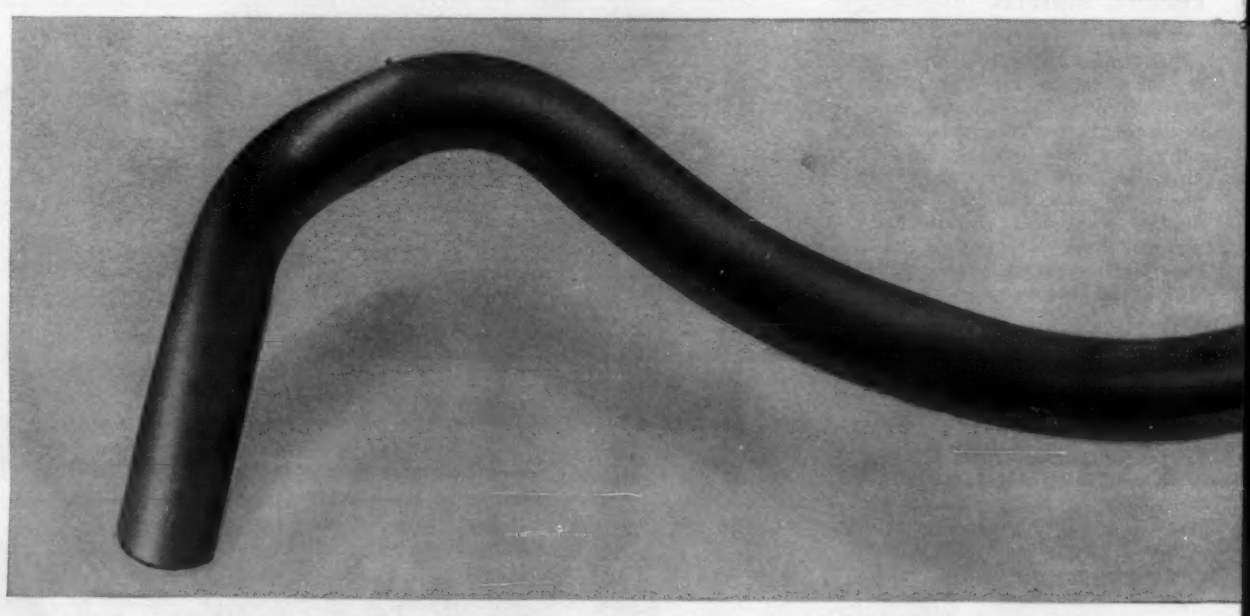
AGA's air conditioning committee has also compiled complete portfolios to familiarize salesmen, both in the residential and commercial fields, with gas air conditioning and its advantages to the user.

Big push will be to those homeowners who already heat their homes with gas.

Take Mystery Out Of Air Conditioning

Efforts are being made to "take the mystery out of air conditioning" so that sales people will at least be able to talk air conditioning with confidence that they know a little bit more about it than a prospect.

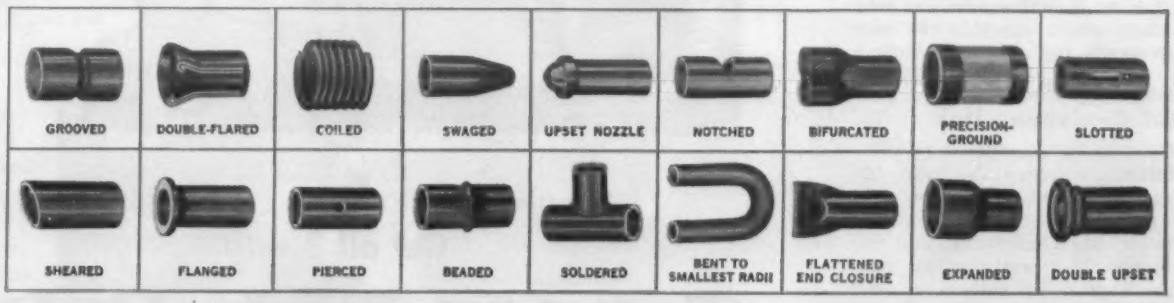
"You don't need to be a graduate engineer to sell residential air conditioning," Selzer told



Multiple-bend discharge tube for refrigeration compressor is fabricated quickly, economically on Bundy-designed fixtures. Seven bends are put into a 7" length of ¼ x .028" Bundyweld in just one semi-automatic operation.

BUNDYWELD...BENT

TYPICAL FABRICATION OPERATIONS POSSIBLE WITH BUNDYWELD TUBING



Shown above are but a *few* of the fabrication operations possible with Bundyweld Steel Tubing. Many of these—and others not shown—were developed through solving a specific problem brought to us by a customer or prospect. At any stage in the development of your product, Bundy invites you to take advantage of this design service.

BUNDYWELD IS DOUBLE-WALLED FROM A SINGLE STRIP

Bundyweld starts as a single strip of copper-coated steel. Then it's . . .

continuously rolled twice around laterally into a tube of uniform thickness, and

passed through a furnace. Copper coating fuses with steel. Result . . .

Bundyweld, double-walled and brazed through 360° of wall contact.

← NOTE the exclusive Bundy-developed beveled edges, which afford a smoother joint, absence of bead, and less chance for any leakage.

sales representatives of Michigan Consolidated Gas Co. "Any meter reader or sales girl can sell it."

"In heating, we found that all we needed was common sense to sell it. That's all we need for cooling.

"It's better to oversell and be checked by your engineer than just sit on your bucket and not try," he urged.

"Service? The biggest part of the service problem has been talk. You don't have to anticipate serious service problems. With trained servicemen available, the serious problems become simple."

Wepfer emphasized this in describing the experience of the Lone Star Gas Co. in Texas. In analyzing its service, Lone Star found it spent an average of $18.27 on service per installation, he said. This included three guaranteed service calls and covered service to cooling towers, too, he pointed out.

Pierce suggested that all gas company employes be told all they want to know about air conditioning. Then urge them to go out and talk air conditioning.

For salesmen, he said, require that they at least mention air conditioning on every call they make.

If employes talk to enough people, they are bound to run across "suspects." When they do, they can turn in the names and salesmen will get a chance at the sale.

He said that Ohio Fuel Gas offers $10 for every prospect turned in that results in a sale. Employes turned in 1,000 names last year and 10% of them were sold, he declared.

Gas Light Opens 100 Doors to Cooling

Wepfer reported that Arkla's new gas light for yard lighting is opening doors for gas air conditioners. The Arkansas Louisiana Power Co. can trace the sale of 100 air conditioners directly to gas lights, he said.

The problem of high sales price is being attacked from two angles by utilities. Frontal attack is to get manufacturers to lower their equipment prices.

Flank attack is to play up lower operating cost to offset high initial cost, to stress utility backing on service, and to emphasize that no moving parts in absorption refrigeration means no loss in efficiency over the years.

On the price problem, the utilities are getting cooperation from the manufacturers. But, the manufacturers warn, lower prices cannot be maintained without volume sales—this year.

On the other hand, volume sales will mean even lower prices and the introduction of more equipment onto the market as new companies are encouraged to take the plunge.

Owen Kuhen, product specialist for absorption refrigeration at Carrier Corp., pointed out that Carrier has reduced price up to 20% on absorption units ranging from 60 to 186 tons in order to compete with reciprocating and centrifugal equipment.

In addition, to help maintain volume, the smaller frame sizes are being released to the company's unitary division at substantially lower prices.

Because the unitary division operates through distributors, Kuhen urged the gas utilities to cooperate with its distributors in the sale of absorption equipment.

Janitrol Earns Award for Ad Campaign

PAUL A. RYAN (l.), manager of advertising and sales promotion, Janitrol Div. Surface Combustion Corp., accepts ABP Award of Merit from H. H. Morse, vice president of Associated Business Papers. D. J. Alcorn (r.), Janitrol account executive for Beeson-Reichert, Inc. advertising agency, looks on. Award was for campaign to link merchandise with seasonal promotion and encourage dealers to use sales aids.

Costs High on Small Jobs

N. K. Hall, manager of the Air Conditioning & Refrigeration Div., Ready-Power Co., conceded that smaller gas air conditioning equipment was at a price disadvantage when compared to electric equipment.

"But, after you pass the 40-ton point, we can start matching dollars with the electric boys on installed cost," he declared.

He said that Ready-Power, which makes compressor type equipment driven by a gas engine, has experienced trouble with contractors bidding too high on jobs. From force of habit in working with electrical equipment, they add charges for piers and wiring that aren't needed, he said.

Talks Up Low Operating Cost

In selling gas air conditioning, Hall added, it is important to tell the customer about the low operating costs. In many cases, they will more than offset the higher initial cost he pays for the equipment.

"Operating costs will run from one tenth to one half that of an electrical unit," he maintained.

He said Ready-Power's units will use 13 cu. ft. of gas per ton of refrigeration per hour.

Owners of electric heat pumps who experienced stiff electric bills for heating last winter will be particularly attentive to such a story, he advised.

Hall, too, emphasized the need for volume production and sales to get lower prices. He said that Ready-Power has, in the past five years raised prices only 16%, while actual production costs have gone up 30%.

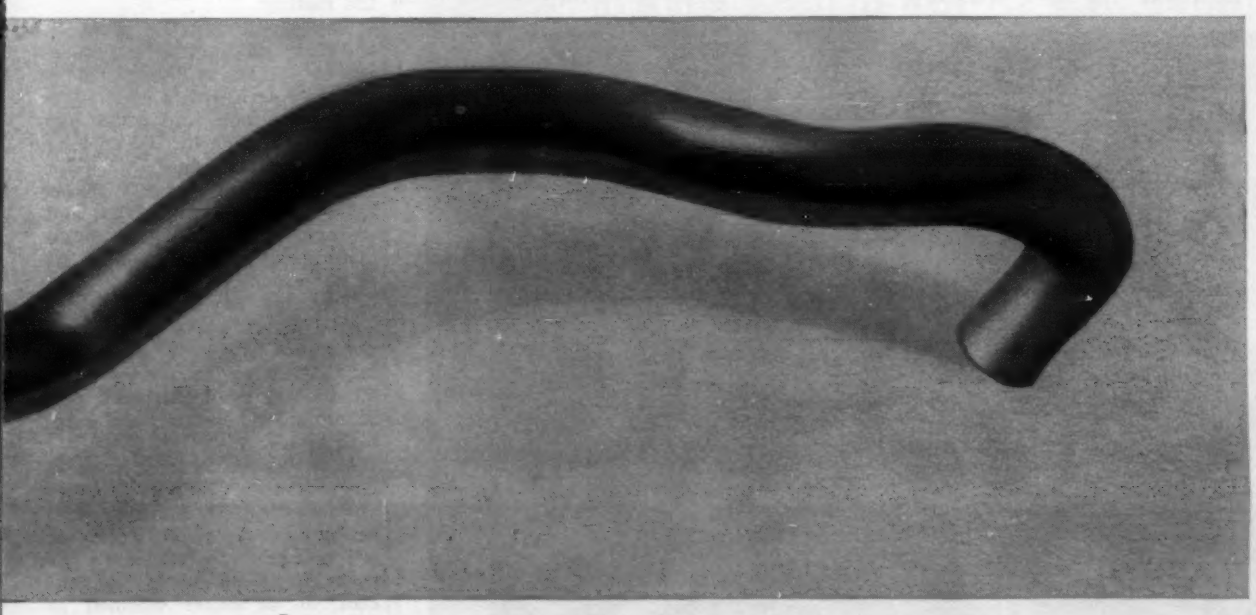
"1957 sales were 200% over 1956," he said, "and 1958 sales may double 1957."

Based on the experience of many major appliances that started out slowly and then spurted rapidly in sales and consumer acceptance, Hall predicted, "we are now at the point of rapidly expanding sales."

For Your Reprint Copy

"Emergency Diagnosis, Repair of Hermetic Unit Electric Components," by John L. Zant, mail this ad with your name and address to: Air Conditioning & Refrigeration News, 450 W. Fort, Detroit 26, Mich.

Only 25¢ each.



7 TIMES IN 7 INCHES

...and Bundy's fabrication experts mass-produced the part at low unit cost!

Seven bends in just seven inches—a tough fabrication operation, impossible with ordinary tubing! Yet Bundyweld® Tubing took the stresses . . . stayed *leakproof by test.*

Double-walled from a single *steel* strip, Bundyweld is the master of volatile refrigerants . . . resists vibration fatigue. No wonder it has become the standard of the industry.

Bundy® engineers will design your tubing part, or work with your designers at any stage in the creation of a product. Many times they can point out money-saving shortcuts.

With Bundyweld, there's no such thing as an "impossible" bend. And Bundy can turn out tubing parts by the millions . . . package them with care, and deliver them right on schedule.

Check first with Bundy—where you get dependable Bundyweld Tubing plus unmatched design and fabrication services. Bring *your* tubing problems to Bundy. Call, write or wire us today!

BUNDY TUBING COMPANY, DETROIT 14, MICHIGAN

WORLD'S LARGEST PRODUCER OF SMALL-DIAMETER TUBING • AFFILIATED PLANTS IN AUSTRALIA, ENGLAND, FRANCE, GERMANY, AND ITALY

There's no real substitute for

BUNDYWELD® TUBING

Bundy Tubing Distributors and Representatives: *Northeast:* Chas. H. Stamm, 10 N. Main St., West Hartford, Conn.; Austin-Hastings Co., Inc., 226 Binney Street, Cambridge 42, Mass. • *Middle Atlantic:* Atlantic Tube & Metals, Inc., 451 New Jersey State Highway #23, Wayne, N. J.; Rutan & Co., 1 Bala Ave., Bala-Cynwyd, Pa. • *Midwest:* Lapham-Hickey Steel Corp., 3333 W. 47th Place, Chicago 32, Ill.; Midco Supply Company, 1346 South 20th Street, Omaha, Neb.; Williams and Company, Inc., 901 Pennsylvania Ave., Pittsburgh 33, Pa. • *South:* Peirson-Deakins Co., 823-824 Chattanooga Bank Bldg., Chattanooga 2, Tenn. • *Mountain:* M. L. Foss, Inc., 1901-1927 Arapahoe Street, Denver 1, Colo. • *Southwest:* Vinson Steel & Aluminum Co., 4606 Singleton Blvd., Dallas, Texas • *Northwest:* Eagle Metals Co., 4755 First Avenue, South Seattle 4, Wash. • *Far West:* Pacific Metals Co., Ltd., 2187 S. Garfield, Los Angeles 22, Calif.; Pacific Metals Co., Ltd., 1900 Third Street, San Francisco 7, Calif.

Bundyweld nickel and Monel tubing are sold by distributors of nickel and nickel alloys in principal cities.

Painting Costs Reduced

Pinpoint Humidity Control Protects Stocks From Rusting In Modern Metal Working Plant

OAKS, Pa.—One of the first completely air conditioned metalworking plants in the United States, the new, modern Penco Metal Products Div. Mfg. center here is using pinpoint humidity control to effect substantial economies in steel storage.

Penco manufactures steel lockers, shelving, and cabinets sold through dealers to industry, schools, and many institutions.

The firm is also engaged in government and other special product contracts.

The new plant was designed, constructed and leased by Robert E. Lamb, Inc., industrial engineer and constructor of Philadelphia.

In the past, Penco, a wholly-owned division of Alan Wood Steel Co., was forced to paint its steel stock immediately after it was formed. Without the protective layer of paint, the stock would be coated with a film of rust within 24 hours.

Now, with the storage area controlled through Trane air conditioning at 35% humidity, the raw steel parts can be stocked indefinitely. This results in a marked saving through elimination of the extra coat of paint and accompanying labor costs.

In addition, it means the plant can deliver the product in the color desired within 24 hours.

W. H. Reeves, manager, sales promotion for Penco, explained, "Our former practice was to store finish-painted stock in one standard color. This meant that the turnover of that stock depended on demand for that one color. Otherwise, we had to wait for the next manufacturing schedule and paint the order special.

"It also meant that the stock could be easily spoiled by scratching the enamel in handling. We have thus eliminated painting from the cost of our stock inventory.

THESE TRANE air handling units (below arrow) distribute either heated or cooled air to the work area. Through humidity control, Penco has reduced its paint and storage costs on freshly formed steel stock.

"We can now manufacture quantities of fully fabricated stock parts according to demand for the part without consideration for color demand.

"The total result is improved control of inventory and overall improvement in deliveries regardless of color.

"The amount of reduction in manufacturing costs cannot be given at this time, but the efficiency of factory operation and customer service are obvious," Reeves said.

Not just the steel storage area, but the entire plant and office is Trane air conditioned.

Principal component of the system is a 600-ton capacity Trane hermetic centrifugal compressor which furnishes chilled water to "UniTrane" room units in the office and to "Climate Changer" air handling units in the factory.

The manufacturing plant, a one-story rectangular structure, 700 by 180 ft., is divided into a high bay area with a 90-ft. span by 700 ft. long, and a low bay area 90 ft. wide by 700 ft. long with 18-ft. clearance.

The high pay area includes 9,000 sq. ft. steel receiving and storage, 45,000 sq. ft. detail manufacturing, and 9,000 sq. ft. of sub-assembly space.

The low bay area includes 18,000 sq. ft. parts storage dehumidified to prevent steel rusting, 22,500 sq. ft. power ventilated finishing department, and 22,500 sq. ft. erection and shipping space.

In the manufacturing area, 13 large Trane Climate Changer air handling units are spaced throughout the plant. Fresh air is brought to these units through goose necks on the roof. It is either warmed or cooled and distributed to the working area. Average unit delivers approximately 23,000 c.f.m.

In the high crane bay area, the traveling crane dictated the minimum height for suspended air handling units. Here the Climate Changers are mounted about the crane track.

They are equipped with special louvered discharge nozzles which effectively distribute the conditioned air down to the employe level.

The same coil is used for chilled water in the cooling season and for hot water in the heating season. A thermostat in the discharge shuts off the outside air damper at a predetermined minimum setting.

Control of temperature is accomplished by a thermostat regulating a by-pass valve in the water line, plus a duct stat regulating the percentage of outside air used.

In the office space, there were varying occupant comfort requirements. These requirements were met by 24 UniTrane units. In the stenographic pool, the conditions are met by two Climate Changers and a ductwork system.

Penco management is convinced that the added inducement of air conditioning has helped reduce employe turnover as well as attracting an ample qualified skilled labor supply.

In fact, the firm reports it had 700 applications for about 50 job openings at a time when skilled help was at a premium.

When you need copper tube fittings look for the Anaconda orange and black carton

COMPLETE RANGE OF TYPES AND SIZES

Brass Fittings for Flared Tubes. In all standard combinations, nominal sizes from 1/8" through 3"

Wrought-Copper Solder-Joint Fittings. Nominal sizes 1/8" through 4"

Flanged Fittings. In sizes to meet all standard requirements

Accessories. Hangers, Flanging and Sizing Tools, Tube Straps

Cast-Brass Valves. Full range of standard sizes and combinations

Cast-Brass Solder-Joint Fittings. Nominal sizes from 1/8" through 12"

Wrought-Copper Solder-Joint Fittings for Refrigeration and Air Conditioning use. Actual OD sizes 3/16" through 4 1/8"

Cast-Brass Solder-Joint Drainage Fittings. In all standard combinations from 1 1/4" through 8"

Designed for your convenience, the new Anaconda carton serves as a handy container on the job, in your truck or in the stock room. Contents are clearly indicated so you can quickly spot the fittings needed.

These new cartons are being placed in the hands of Anaconda distributors as quickly as possible, but whether in the new package or not, Anaconda Fittings are the best you can buy. On your next copper job, use products that you can depend on—use Anaconda Copper Tubes and Anaconda Fittings.

HAVE YOU OUR CATALOG, "Anaconda Copper Tube Fittings and Valves"? If not, write for a copy today. It lists, with illustrations and roughing-in dimensions, the complete range of Anaconda Fittings in sizes from 3/16" through 12" for all copper tube applications—general plumbing, heating, air conditioning and refrigeration. Ask for Anaconda Publication C-12. Address: The American Brass Company, Waterbury 20, Conn. In Canada: Anaconda American Brass Ltd., New Toronto, Ontario, Canada.

ANACONDA®

COPPER TUBE AND FITTINGS

Products of The American Brass Company

AVAILABLE THROUGH PLUMBING WHOLESALERS

Room Conditioner Promotions

'Purple People Eater,' Free Installation, Swimming Pool, Big Sizzle Contest Help Spur Sales Across Nation

DETROIT—Everything from free installation to a "purple people eater" in person are being used by dealers and utilities to promote air conditioning sales this month.

Atlantic City dealers offered free installation of any room air conditioner purchased as part of a "Live Better Electrically" promotion.

The purple people eater showed up at Birmingham, Ala.'s Watson's TV Center for an "Out of This World Sale" featuring room air conditioners.

In the same city, A. J. Williams Co. moved a trailer loaded with Vornado air conditioners onto the sidewalk in front of his store and did business out of it for three days.

Throughout Connecticut, the Connecticut Light & Power Co. offices put on "Fantasmaganza" displays of room units sold by local dealers and helped boost their sales with cooperative newspaper advertising.

Dallas room air conditioning dealers are just winding up a "Big Sizzle" promotion offering free air conditioners to the eight persons making the best guesses as to the highest temperature between June 15 and June 22. Entry blanks are obtainable at dealers' stores. To break ties, entrants are also asked to guess the lowest minimum temperature between those dates.

To show that air conditioning equipment is no longer strictly for a single season but for year-round use, the Cincinnati Gas & Electric Co. is conducting a "Cool as an Ocean Breeze—Warm as the Tropic Sun" promotion through July 18.

In addition to a display of all-electric heat pumps and year-round gas air conditioning, the utility has an 18-ft. swimming pool on its downtown display floor to carry the "Ocean Breeze" theme.

On June 12, the *Cincinnati Enquirer* published a special section devoted entirely to air conditioners, heat pumps, gas air conditioners, dehumidifiers, and fans.

In Kingston, Pa., Rowlands Refrigeration used a newspaper advertisement to urge the public to "play it smart. Before you buy room air conditioning know the B.t.u. output of the unit."

The advertisement prominently displayed the B.t.u. rating of a G-E air conditioner.

Florida Power & Light Co. is offering free air conditioner campaign sales aids built around the theme "Don't Simmer This Summer."

Electric Power Board of Chattanooga is promoting air conditioning three days a week through the "Miss Weathervane" TV weather show. The pretty forecaster is "Miss Chattanooga of 1958," who incidently was a former employe of the Power Board.

All Room Air Conditioners Must Have Separate Circuit, Atlantians Warned

ATLANTA — City Electrical Engineer Dewey Johnson has warned Atlantians planning to install air conditioners that they should check their electrical wiring carefully before doing so.

"Many people are buying air conditioners with the belief that they can simply plug them in and start cooling off," Johnson declared. "Often additional wiring must be done before units can be installed in compliance with the city's code.

"The Atlanta code," he continued, "says that a room air conditioner with a third or more horsepower must be operated on a separate circuit all to itself. Since all these air conditioners have at least a third horse motor, that means all air conditioners in Atlanta must operate on separate circuits," he added.

Stimulates Early Sales

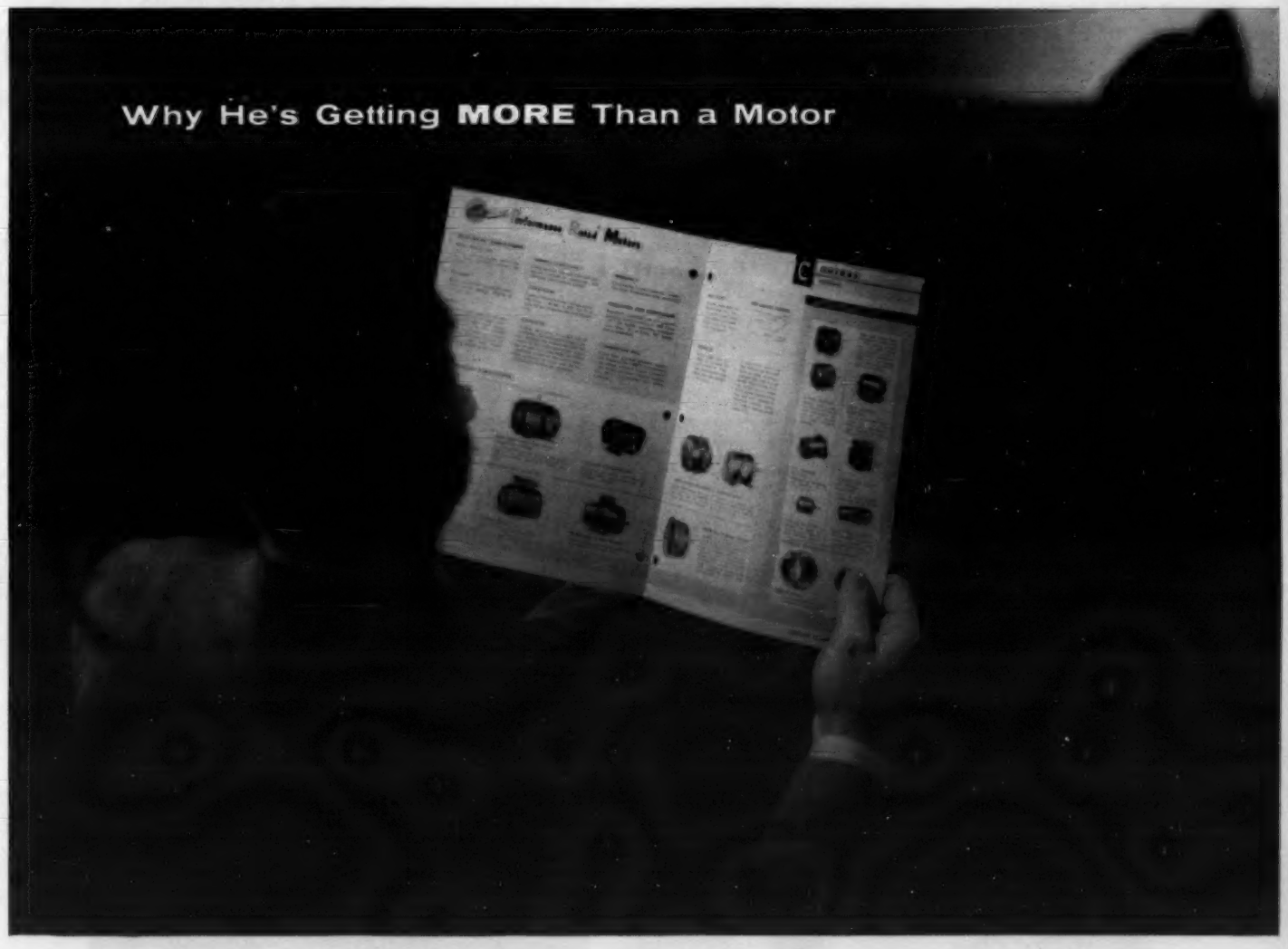
NEW ORLEANS—A display at Maison Blanche here of simulated windows containing room air conditioners to show how they fit has helped sell the units early in 1958.

NEMA Room Unit Section Announces Engineering Officers

NEW YORK CITY—Officers of the General Engineering Committee of the newly-formed Room Air Conditioning Section of the National Electrical Manufacturers Association were announced by Joseph F. Miller, NEMA's managing director, following the committee's organization meeting.

William G. Spiegelhalter, engineering manager, product design, room air conditioning, General Electric Co., was elected chairman, and Robert H. Meyerhans, director of engineering, Fedders-Quigan Corp., was elected vice chairman.

The committee also named subcommittees to consider product standards, electrical codes, and other technical and engineering matters relating to room air conditioning equipment. Frequent meetings will be held for the purpose of developing recommendations for referral to the section.



He's getting answers to motor problems the easy way

with the Century Electric Motor Application Guide

Want a quick, easy way to get answers on motor applications? This easy to follow Century Electric motor application guide will help you do just that. Here's how you can make it work for you.

Suppose you need a motor to drive a fan. Knowing your power supply (a-c or d-c) you look on the chart on page 2 for the motor whose characteristics match the load you want to drive. Having done this it's easy to check the mechanical variations (page 8) to find the enclosure you need—depending on whether it is operating in an explosive, moist, etc. atmosphere. Then you have type, dimensions and operating characteristics, all at your fingertips.

Of course, this is good for simple routine applications. If your problem is more complicated, your Century Electric sales engineer will be glad to help. He can sit down with you and offer on-the-spot advice or if necessary get more complete data—drawing and models for you.

Such help explains why you get *more* than just a motor from Century Electric. Century Electric Company, 18th and Pine St., St. Louis 3, Missouri.

CENTURY ELECTRIC COMPANY

St. Louis 3, Missouri *Offices and Stock Points in Principal Cities*

Century

Plant Vacation Schedule

Shutdowns Starting

JULY 7 or Earlier

This is the second in a series of handy guides to vacation schedules announced by manufacturers. It is published to help salesmen avoid useless calls and to assure purchasing departments of adequate stock on hand. This list will not be repeated. CLIP and SAVE for future reference.

Company	Shutdown Period Plant	Office	Shipments From Plant
Air Conditioning Div., American-Standard	6/27-7/11		Regular
American Air Filter Co., American Air Div. (Louisville plants)	6/28-7/13	Open	Emergency
American Furnace Co., Heating Div.	7/4 -7/20		Stock Only
Auer Register Co. (Cleveland plant)	7/7 -7/21	Open	Stock Only
Bacharach Industrial Instrument Co.	7/1 -7/14	Open	Stock Only
Bard Mfg. Co.	7/7 -7/19	7/7 -7/19	
Bishop & Babcock Mfg. Co.	7/3 -7/21	7/3 -7/21	Emergency
Chicago Pump Co.	7/7 -7/20	Open	Stock Only
Delavan Mfg. Co.	7/4 -7/13	7/4 -7/13	Emergency
Deming Co.	7/4 -7/18	7/4 -7/18	Emergency
Frigid Igloo Mfg. Corp.	7/1 -7/10		Stock Only
Furnas Electric Co.	7/7 -7/20	7/1 -7/20	Stock Only
General Controls Co.	6/27-7/14	Open	Regular
Gould Pumps, Inc.	7/3 -7/13	7/3 -7/13	Emergency
Howard Refrigerator Co., Inc.	7/4 -7/14	7/4 -7/14	Stock Only
Illinois Engineering Co.	7/3- 7/20		None
Janitrol Heating & A.C. Div., Surface Combustion Corp.	7/7 -7/18		Emergency
Keco Industries	6/23-6/30	6/23-6/30	
Kinney Mfg. Div., New York Air Brake Co.	7/5 -7/20	Open	Emergency
Recony Sales & Engineering Corp.	7/4 -7/13	7/4 -7/13	None
Roberts-Gordon Appliance Corp.	6/29-7/6	6/29-7/6	None
Rubatex Div., Great American Industries	7/3 -7/14		
Tube Manifold Corp.	6/30-7/11	6/30-7/11	Emergency
Warren Webster & Co.	7/3 -7/21	Open	Emergency

'58 Sales Picture as Wampler See It--

(Concluded from Page 1)

conditioning of homes in order to minimize obsolescence should help.

"It is reported that residential air conditioning to date is running slightly ahead of last year, and our estimate now is that between 150,000 and 160,000 installations will be made during 1958."

Drawing from his past experience in the banking field (and some present activity as a director of a prominent New York state bank) Wampler said that the current "easier money" situation should definitely help residential air conditioning sales through construction of more homes, and easier financing of home improvement.

Carrier President William Bynum expressed the hope that efforts would be made towards opening up of mortgages or other long-term financing for home improvement, including air conditioning.

"About 11,500 heat pump air conditioners were sold last year for central cooling and heating," said the Carrier board chairman. "The forecast for 1958 looks like about 16,000 systems. Carrier's own production schedule calls for twice as many heat pumps as last year."

Carrier's own sales volume this year is running slightly behind 1957, but "we planned and budgeted for it that way," said Carrier's President William Bynum.

He explained that the company had not pushed hard to load up its distributors and dealers with merchandise, with the result that the plants are now working at top speed to fill a growing demand from its field sales forces, but with neither the plant nor the field facing inventory problems.

Portable Picture Not Clear Yet

On the portable air conditioner, Wampler said that it is still too early to know for sure what acceptance it will have, since Carrier's models have been available in volume for only a little more than a month. Early field reports, he said, indicated that possibly between 15 and 20% of the room air conditioners sold with the Carrier name in 1958 may be of this type.

The Carrier executive said that in his estimation there will always be a market for room air conditioners, but the extent of that market would depend on the proportion of the buying public that will be satisfied with "relief cooling" as contrasted to "complete air conditioning."

Sees Only a Dozen Room Unit Makers In Less Than 10 Years

He also predicted that within less than 10 years there will be a dozen or possibly less manufacturers left in the room air conditioner business, and that Carrier would be one of them.

In terms of broad market categories, the over-all business of Carrier was in 1957 a little less than half in the field of consumer durables (which includes water heaters, freezers, and freezer-refrigerators as well as smaller air conditioning products). The rest is in capital goods equipment for commerce, industry, and government.

Of Carrier's total volume, about 15% of it is with the Federal government, it was stated. However, a high percentage of this is in the corporation's regular line of products, rather than on special contracts. The Marine Div. of the company accounts for a substantial part of this volume.

Carrier's volume in its last fiscal year was $263 million, and Wampler has predicted in the past that it might reach the $400 million mark early in the 1960's. However, he said that for the present, at least, the increase would not come through acquisition of other companies.

Sales help when needed is just one reason I suggest American Blower Packaged Air Conditioners

There's a factory training school

You are offered a full training course by American Blower's skilled engineers and seasoned sales experts. You learn the products inside out, including installation and service. You learn how to sell them and who to sell them to.

There are leads on new jobs

Your distributor gets sales leads from American Blower branch offices. These leads are directed to you and can result in profitable new jobs. Remember: you can sell every business with the complete line American Blower offers.

There's help with complex surveys

At your service, at each of the 73 branch offices located throughout the country, are American Blower's trained sales engineers. These men are ready to assist you on unit selection in any large or complex air-conditioning survey.

There's advertising and promotions

Powerful ads in leading national magazines, and hard-hitting sales promotion, build the American Blower brand name, and help presell your customers for you. American-Standard,* American Blower Division, Detroit 32, Mich.

It pays to install American Blower Packaged Air Conditioners

* American-Standard and Standard® are trademarks of American Radiator & Standard Sanitary Corporation.

AMERICAN-Standard
AMERICAN BLOWER DIVISION

'Silver Shield' Program--

(Concluded from Page 1)

implementation with sales promotional material and operation by local groups."

The Silver Shield Program is described by the association as "a promotion program of the warm air heating and air conditioning industry, established for the purpose of stimulating public interest, approval, and demand for warm air heating and air conditioning installations installed in compliance with the standards of design and installation published in the manuals of the National Warm Air Heating & Air Conditioning Association."

"Over the past 40 years, our association has spent huge sums in research to learn how to install comfort-delivering warm air heating and air conditioning systems as well as for the publication of manuals of design and installation for dealers to use in their installation work," stated George Boeddener, managing director of the association.

"Now, we have developed a program which will make it possible for dealers who really want to install quality systems, designed and installed in accordance with the NWAHACA manuals, to merchandise these systems with sound, hard-hitting sales promotional support—right in their own home town markets."

Objectives of the program, as outlined by the association are:

"1. To provide warm air heating and air conditioning installations to the public which are designed and installed in accordance with prescribed installation methods, certified to be so designed and installed, and labelled with the Silver Shield as identification of this quality.

"2. To encourage dealer-contractors to promote, sell, and install warm air heating and air conditioning installations of Silver Shield System quality for the resultant benefit of the consuming public as well as the industry.

"3. And, in so doing, to enable manufacturers of suitable equipment and components to be assured of competent selection and installation of their products to the ultimate satisfaction of the public."

Commenting on the program, Frank Meyer, NWAHACA president, said that "Fundamentally, the principle objective of the Silver Shield Program is to render a superior and safeguarded service to the public.

"This is in keeping with the association's primary objective of 'increasing owner and user satisfaction to the very highest possible degree,' as stated in its constitution and by-laws. The Silver Shield Program makes it possible for consumers to identify, specify, and get a quality warm air heating and/or air conditioning system."

The program revolves around and features the Silver Shield System. This system, it was explained is a warm air heating and/or air conditioning system which is designed, installed, balanced, and adjusted in accordance with the designated manuals of the association.

Manual 3—"Calculating Heat Losses"; Manual 4—"Warm Air Perimeter Heating"; Manual 6—"Adjusting Air Conditioning Systems for Maximum Comfort"; Manual 9—"Design and Installation of Warm Air Winter Air Conditioning Systems and Year-Round Air Conditioning Systems"; Manual 11—"Summer Air Conditioning."

A Silver Shield System is identified with a Silver Shield identification label attesting that it complies with these standards. There are three Silver Shield labels: one for a winter air conditioning system, one for a summer air conditioning system, and one for a summer-winter air conditioning system.

Commenting on the program, Tom Byrd, first vice president of the association, said, "One of the several significant features of the Silver Shield Program is that it provides a means to label a quality warm air heating or air conditioning system. . . .

"The Silver Shield Program will focus public attention on the importance of having a properly designed system installed and, as a result, will enable the individual units and system components used in the system to deliver the maximum performance for which they were originally designed and built."

The program has been specifically designed and built for use at the local level.

"It provides a means by which each local segment of the industry can unite its efforts to promote quality heating and air conditioning installations to consumers right in its area.

"In fact, local industry actually operates and is responsible for the Silver Shield Program in its own area. Local industry representatives interested in conducting a Silver Shield Program, organize an 'Indoor Comfort Bureau' (a name used by the association merely to identify the local group sponsoring the Silver Shield Program—the group can adopt whatever name they choose) for the specific purpose of operating the program," NWAHACA said.

Organization of the local "Indoor Comfort Bureau" can be sponsored by a local trade association, if one already exists, or by a local committee of industry representatives (if there is no local association in the area).

The local Bureau is licensed by the NWAHACA to conduct the Silver Shield Program in its area, the announcement said.

"It sponsors, operates, and finances local public education, advertising, promotion, and publicity on the Silver Shield System. It provides and supervises dealer training in use of the NWAHACA manuals for installing Silver Shield Systems.

"It receives applications for Silver Shield System identifying labels from its members—or others desiring to install Silver Shield Systems — and issues them, based on evaluation of conformance of these systems with prescribed Silver Shield standards. It records such applications.

"It receives buyer complaints that have not been previously satisfied by installers, and attends to their satisfaction.

"And it is fully responsible for the satisfactory performance of its members and the compliance of the installations which it identifies with Silver Shield labels as required in its operating license which is granted by the National Warm Air Heating & Air Conditioning Association."

Group promotion activities will be heavily emphasized in the Silver Shield Program.

Advertising plans, layouts, scripts, mats, booklets, etc., will be made available to local Silver Shield promotion groups by the NWAHACA.

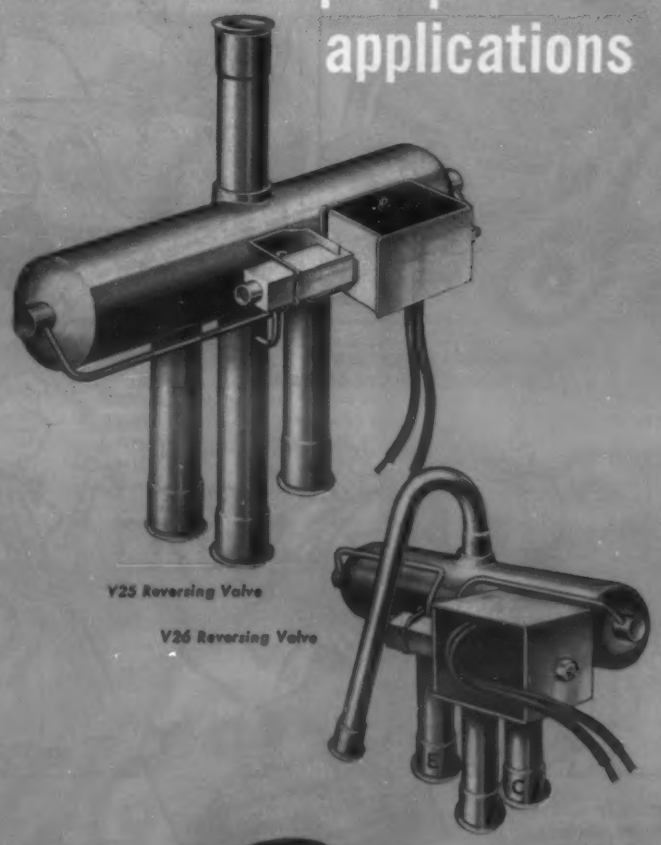
Production Now Available
On Normal Lead Time

New Ranco Slide-Type Reversing Valves

V25 and V26

designed specifically for

heat pump
applications



V25 Reversing Valve

V26 Reversing Valve

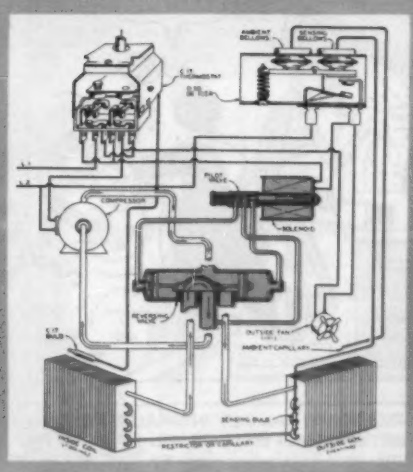
Ranco®
INCORPORATED
COLUMBUS 1, OHIO

World's Largest Manufacturer of Refrigeration Controls

The new Ranco V25 and V26 Slide-Type Reversing Valves, designed specifically for heat pump operation, are now available for delivery on normal lead time.

Constructed to minimize friction and heat exchange, they are built to operate under full pressure and prevent mid-stroke stops regardless of how rapidly the change between heating and cooling phases occurs. There is sufficient by-pass during the transfer period to prevent overloading of the compressor due to excessive head pressure.

The hermetic unit is controlled by a single solenoid pilot valve and has no metal-to-metal contact to minimize friction. The transfer slide also acts as thermal insulator in the internal chamber between the hot and cold gas to reduce heat exchange. A wide range of tonnage applications and solenoid voltages and frequencies is available.



Suggested Installation. V25 Reversing Valve is used here with the Ranco D50 Automatic De-Icer and the C17 Automatic Cycling Control to give absolutely automatic operation and cycle change through heating, cooling and de-icing phases.

SOLENOIDS AVAILABLE

Code	Volts	Cycles	Watts
L27-100	115 A.C.	60	9.5
L27-101	230 A.C.	60	9.5
L27-102	24 A.C.	60	9.5
L27-103	208 A.C.	60	9.5
L27-104	115 A.C.	50	9.5
L27-105	230 A.C.	50	8.9
L27-106	12 D.C.	—	10.6

TONNAGE APPLICATIONS

The following tonnage applications (based on Refrigerant 22) are available in the new Ranco V25 and V26 Reversing Valves:

V26-100 (capacity up to two tons)
V25-300 (capacity up to three tons)
V25-500 (capacity from three through five tons)
V25-750 (capacity from five through seven and one-half tons)

Get full details on the new V25 and V26 Reversing Valves by writing Ranco. And, if you're in (or will be in) the automatic heat pump field, by all means get the full story on the D50 Automatic De-Icer Control and the C17 Automatic Cycling Control. A word to Ranco will bring you complete information.

AROUND THE WORLD IN 50 DAYS

"Inside Dope" by GEORGE F. TAUBENECK

(Continued from Page 1, Col. 1)

stration tonight. Place de la Concorde. Come one, come all." Here's what happens:

Politicians (corresponding to our Congressmen) arrive at the appointed place wearing badges of office, and carrying placards on sticks, like union pickets on strike. Either they parade for awhile, or they stand around chanting, "Up with de Gaulle," or "Down with de Gaulle," or something of the sort. Anybody can join the party.

Occasionally the police move in, and the shouters scatter like small-boy baseballers who've broken a window. Afterward everybody goes home, or to a sidewalk cafe.

It's something like a collegiate pep meeting before a football game.

Photographers for *Life* and *Paris Match* magazines pose a few fist-clenching scenes, and American tourists unsling their cameras, too. (In fact, one heard the accusation that the Cook's Tour People were staging these "riots" to provide a little phony excitement for their guests.)

All this while, mind you, the American visitors were receiving frantic telegrams from worried relatives and associates at home, advising them to quit strife-ridden Paris at once.

Oh, brother!

During May and June Paris is one of the most delightful spots on the good Earth. This season, 1958, was no exception.

Frigidaire Is Enviable In France

Thanks largely to its exclusive dealerships, the French Frigidaire operation is enviable.

General Motors of France *imports* G-M autos. It *manufactures* Frigidaire refrigerators, household and commercial, from stem to stern. Last year this concern produced 154,000 home refrigerators, and sold 163,000 (emptying its warehouse).

That volume of sales, according to General Manager Phillipe Join-Lambert, accounted for more than half of the total French household refrigerator registry in France. And 154 *exclusive* dealers (averaging a thousand sales each) did the job.

No distributors intervened. No competing brands are displayed or sold by these exclusive dealers. Price competition rarely enters the picture. *Ideal situation.*

Some 85% of these Frigidaire dealers also are franchised to sell commercial-type condensing units. Local craftsmen build the cabinets for water coolers, ice cream cabinets, meat-milk-fish display cases, etc.—to Frigidaire-inspected specifications. Frigidaire supplies the units, and dealers make the sales and installations.

SERVICE is the big deal here (as it should be everywhere). General Motors of France headquarters maintains close control over dealer service capabilities and operations.

To become franchised, and stay franchised, a dealer must have adequate service equipment, and send all his mechanics to three-week factory schools regularly.

Furthermore, eight Field Service Inspectors are on the job at all times all over the French nation, seeing to it that all service work is high grade.

Who is responsible for this grande policy? M. Phillipe Join-Lambert, ably assisted by M. Jacques Masson and M. Eric Tuffier.

Commercial Refrigeration In France

Ice cream cabinets, water coolers, reach-in cabinets, a few display cases (some triple-deck) comprise a growing French market. Still small, however, by U. S. standards. To give you an idea: in 1957 Frigidaire sold less than 300 water coolers, and close to 1,400 ice cream storage cabinets.

Total Frigidaire commercial condensing units sold in 1957: 13,000. (France as a whole absorbed 53,000.)

Air conditioning? Yes, there's an indifferent market for it in the south of France. But the French people aren't allowed to import hermetically sealed condensing units of 1 hp. and above; nor are they facilitated to manufacture them.

As in the case of autos, air conditioners shipped into France bear a 30% import tax, plus "social use taxes" adding up roughly to 65% *ad valorem*. That makes importation of American units almost out of the question.

Prodded by the government, Frigidaire de France is working hard to export its household refrigerators and commercial condensing units. This it does at little or no profit—to Belgium, Spain, Portugal, Grace Kelly's Monaco, and the Luxembourg of "Don't Call Me Madame."

Production of Frigidaires was launched in Gennevilliers (near Paris) in March, 1948. By December, 1957, this French branch of General Motors had produced and sold its 500,000th unit. Four years from now Mr. Tuffier predicts that General Motors of France will have produced its 1,400,000th unit.

The plant at Gennevilliers is clean, modern, efficient, and impressive. (Yes, "Dope" took the usual walking tour, and now claims the *International* championship of long-suffering miles walked through factories by a totally disinterested mechanical moron.)

On a dandy Sunday, Mr. Tuffier provided "Dope" with a luxurious new Cadillac (big thrill, after riding around in "bugs" for weeks) chauffeured by Richard Alezniczak.

Monsieur Dick is a helluva good guy. Speaks pretty good English for a Frenchman, has chauffeured such diverse personalities as the late Bernarr McFadden and the immediate Harlow Curtice. On the side he has driven Mercedes and Ferraris in Grand Prix road races.

It was a struggle, but "Dope" forced Monsieur Dick to join him at a marvelous luncheon in the restaurant "Cocq Hardie." Chauffeurs and visiting VIPS

(Concluded on Page 13, Col. 1)

Mr. Mulligan solves his credit problem
BOSS, THERE'S A BIG SHIPMENT OF GAUGES DUE IN TOMORROW—C.O.D.!
GOSH! I WONDER IF WE CAN PAY FOR IT NOW?
MULLIGAN Refrigerating Co.
NO HELP HERE
GUESS I'LL HAVE TO SELL MY CAR...
DING!
NO SALE
CLINK!
MR. MULLIGAN! —SELLING YOUR CAR?
YES, WE NEED THE CASH TO MEET A C.O.D.
PRICED RIGHT FOR QUICK SALE!
ABC REFRIGERATION SUPPLY COMPANY
WHAT YOU REALLY NEED IS A COMPLETE AIR CONDITIONING AND REFRIGERATION WHOLESALER; THEN YOU WON'T NEED SO MUCH CASH
HUH? I WON'T?
RIGHT! YOU CAN BUY IN SMALLER QUANTITIES, AND GET SMALLER BILLS. IF YOU WANT TO PAY LATER, WE KNOW YOUR CREDIT REPUTATION
MULLIGAN Refrigerating Co.
PRICED RIGHT FOR QUICK SALE
TRASH
ABC REFRIGERATION SUPPLY? I NEED A COUPLE OF XYZ GAUGES. I'LL PAY YOU WHEN THE JOB'S DONE. OK?
SURE. WE'LL SEND THEM RIGHT OVER
COMPLETE AIR CONDITIONING & REFRIGERATION WHOLESALER
HEADQUARTERS FOR FREON REFRIGERANTS

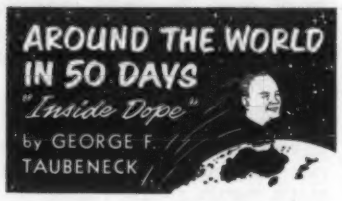
PROVED DEPENDABLE... When you need a refrigerant, be sure to see your complete air conditioning and refrigeration wholesaler... and then be sure you *always ask for Freon* *. Choose "Freon" and you choose a refrigerant backed by more than 26 years of Du Pont technical and manufacturing leadership. Choose "Freon" and you choose a refrigerant that sets the industry's standard for purity and dryness.

Buy where you see this sign...

DU PONT REG. U. S. PAT. OFF. **FREON** REFRIGERANTS

BETTER THINGS FOR BETTER LIVING... THROUGH CHEMISTRY

* *Freon is Du Pont's registered trademark for its fluorinated hydrocarbon refrigerants.*



(Concluded from Page 12, Col. 5)

just don't do that together, it seems.

However, we struck up a happy tocsin for "Liberty, Equality, and Fraternity" (slogan of the sometimes forgotten Revolution Francaise).

At Long Last, HEATING

Until almost the final week of our "Around the World In 50 Days" tour, we could report nothing about activities in the heating field. Few homes anywhere outside the United States of America enjoy central heating.

At last! A firm which specializes in it—Stokvis et Fils de Paris!

This is a big importing concern. Everything from machine tools to cigarettes. Penn Controls, for example, from Goshen, Indiana.

Also, this company manufactures oil-and-gas heating equipment for homes. So far this year Stokvis has produced and sold in France and environs 22,000 oil-burning furnaces (under Sundstrand license).

Edward Berthaux is manufacturing manager of this enterprise, Robert-Paul Devoux is the sales manager, and a brilliant young engineer from Viet-Nam, Hoang Van De, runs it.

Yes, again we footsored it through the factory, extensive offices, and warehouses. Also we had a long luncheon together in a tiny "characteristic" Montmartre place, "la Mere Catherine."

Monsieurs Berthaux and Devoux did not speak English. "Dope's" French-talk is not the best. Our go-between interpreter was Hoang, who learned his "American" from Australians in a Japanese prison-camp during World War II. You can imagine. Fun, though.

Especially when we tried without success to convince M. Devoux that John Foster Dulles is NOT a Jesuit.

Household Refrigeration Going Well

There's a brisk market for household refrigerators—chiefly in the 4-cu. ft. size, which retails here for approximately $340. Kelvinator, manufactured under license here by Markt & Co., is one leader in this field.

Theodore Bowry, president of Markt & Co., told us proudly that his factory turns out 300 home refrigerators per day. They used to import condensing units and controls, but now manufacture "the works," complete.

Yves Marchandise, sales manager (what a wonderful name for the title!), happily pointed out that in March of this year Markt & Co. celebrated its 25th anniversary of continuous association with Kelvinator.

And export manager Harry Werckmeister revealed that his firm exports Kelvinator refrigerators to Bahrein, Lebanon, Turkey, Belgium, and Greece.

Also Markt & Co. exports its locally-made Leonard line of household refrigerators which, in Beirut, Istanbul, and Athens, has better brand acceptance than identical Kelvinators.

Following are the names and addresses of Kelvinator distributors (outside of France) supplied by Markt:

A. A. Zayani & Sons, Bahrain, Rashid Zayani; Fouad Salim Saad, Beirut, Fouad Saad; Vahram Gesar & Cie, Istanbul, Mihran Gesar; Sourapas Bros., Athens, Bill Sourapas; Ets Dahaes S. A., Brussels, Henri Dehaes.

Distributors (supplied by Markt of France) of the Leonard brand, which in some countries is even more prominent than Kelvinator—depending on the quality of the distributor:

Philips Liban S. A., Beirut, N. F. Uthemann; Konfer Ltd. O., Istanbul, H. Orun; B & C Panayotidis, Athens, O. Panayotidis.

Wall-Hangers Go Great

According to Roger LeQuinis and A. Germain-Thomas of Frigeco, wall-type home refrigerators are the most interesting innovation in the French refrigeration business today.

In French metropolitan areas they account for some 25% of total sales. Four cu. ft. of course, and they retail for approximately $300.

Frigeco manufactures General Electric refrigerators under license. Condensing units are supplied by B-T-H, General Electric's British affiliate.

Frigidaire, Frigeco (G-E), Kelvinator, and Electrolux between them do approximately 80% of the business. Some 60 other small local brands (most of them utilizing Tecumseh compressors) take care of the remainder.

In Paris, and other large cities, manufacturers maintain their own retail outlets. Elsewhere there are hundreds of independent dealers, sub-dealers, and agents.

Even so, it is estimated that the home refrigerator market in France is less than 20% saturated.

Colored interior panels are popular here. But the Frenchman still demands a white exterior on his refrigerator.

WHAT . . WHEN . . WHERE

American Society of Heating & Air-Conditioning Engineers and American Society of Refrigerating Engineers JOINT MEETING
June 23-25, Leamington hotel, Minneapolis.

National Plumbing-Heating-Cooling Exposition and National Association of Plumbing Contractors Convention
June 30-July 3, Pan Pacific Auditorium, Los Angeles.

Oil-Heat Institute of America Directors Meeting
Sept. 3-5, The Homestead, Hot Springs, Va.

Refrigeration & Air Conditioning Contractors Association Convention
Oct. 12-15, Broadmoor hotel, Colorado Springs, Colo.

Air-Conditioning & Refrigeration Wholesalers Meeting
Oct. 22-24, Sheraton-Palace, San Francisco.

WOLVERINE LEADS THE WAY WITH:

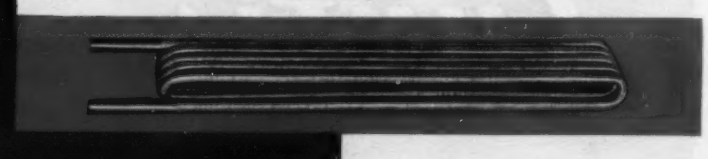
ECONOMIES IN FABRICATED TUBE

WOLVERINE TRUFIN®

This integrally-finned tube permits the design of smaller, more efficient condensers and evaporators. Its one-piece-with-the-tube fins increase heat transfer surface, handle more BTU's per foot of tube. By specifying Wolverine Trufin you can eliminate applied fin assembly—get better heat transfer performance.

BENT TUBULAR PARTS

Wolverine Tube is equipped to make many sizes and styles of U-bends, hair pin bends, trombone and helical coils and serpentine coils with up to 100 feet of tubing in one piece.



LEVEL-WOUND COILS

Greater production and storage flexibility can be obtained by manufacturers through use of Wolverine long-length level-wound coils . . . permitting more tube to be stored in a given area. Level-wound coils allow high-speed, tangle-free unwinding of tube for continuous feeding of automatic equipment.

SMALL TONNAGE CONDENSERS

This is a 1-ton condenser which contains 25 inches of coiled Wolverine Trufin Type H/R which is enclosed in a one-piece, 2-1/2" O.D. copper shell formed by Wolverine's Copper Spun End Process. Similar Condensers can be formed to print in 1/4, 1/2, 1-1/2 and 2-ton capacities.

SPUN END PARTS

One-piece, leak-proof accumulators, driers, accumulator-driers and receivers, etc., are quickly and economically produced with Wolverine's Copper† and Aluminum†† Spun End Process. Stamping, deep drawing and other costly operations are eliminated.

. . . **AND THERE**—Mr. Refrigeration and Air Conditioning Manufacturer—are but some of the products and ways with which Wolverine Tube can help you do a better job more economically. To get the complete story of Wolverine copper and aluminum tube, just write for "Wolverine Serves The Refrigeration Industry."

Wolverine Trufin is available in Canada through the Unifin Tube Company, London, Ontario.

CALUMET & HECLA, INC.
CALUMET DIVISION
URANIUM DIVISION
WOODMAN LUMBER DIVISION
WOLVERINE TUBE DIVISION
In Canada
CALUMET & HECLA OF CANADA LIMITED
WOLVERINE TUBE DIVISION
CANADA VULCANIZER & EQUIPMENT CO. LTD.
UNIFIN TUBE DIVISION

WOLVERINE TUBE
DIVISION OF
CALUMET & HECLA, INC.
17246 Southfield Road
Allen Park, Michigan
Manufacturers of Quality-Controlled Tubing and Extruded Aluminum Shapes

PLANTS IN DETROIT, MICH. AND DECATUR, ALABAMA.
SALES OFFICES IN PRINCIPAL CITIES
EXPORT DEPARTMENT, 13 EAST 40TH STREET, NEW YORK 16, NEW YORK

†† PROCESS PATENT APPLIED FOR † A PATENTED PROCESS RE 22485

MADE IN U.S.A. TO THE STANDARDS OF AMERICAN INDUSTRY

Duct and Fitting Resistance (3)

How and Why Pressures Change In a Duct System, What Occurs When We Change Direction of Air Flow

By Dr. Stanley F. Gilman, Associate Director of Research, Research & Development Div., Carrier Corp.

System Pressure Variations

In a duct system pressure losses will result from energy being dissipated due to resistance of the pipe and fittings.

Pressure changes may result from conversion of static pressure into velocity pressure, or vice-versa, which do not represent energy dissipation.

Since there is frequently confusion in this regard, let us look at some typical pressure variations in a section of ductwork shown in Fig. 4.

A straight section of duct extends between section A and B. From B to C the duct changes to a smaller size. At D duct size is abruptly changed to the larger size again, and terminates at section F.

Below is a diagram of the pressures in the system. A horizontal line representing atmospheric pressure is the reference above or below which pressures in system are measured.

Following the static pressure line, we find that at A, the static pressure has a certain initial value. Due to the flow resistance of the duct, the static pressure decreases uniformly to point B.

Between B and C, static pressure decreases very markedly. Since the air is going from a larger to a smaller duct it is being speeded up. Consequently, most of this change in static pressure is a result only of converting static pressure to velocity pressure. Very little total pressure loss is occurring.

From C to D static pressure again decreases because of duct resistance to the air flow.

Since section C to D is about the same length as section A to B, but velocity is higher because the duct is smaller, static pressure loss in C to D is greater than that in A to B.

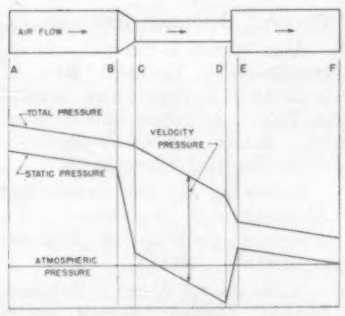


FIGURE 4.

Consequently, the static pressure line slopes downward more sharply than that along A to B.

At section D to E, the small duct is abruptly converted to a large duct. In the larger duct velocity is lower than in the small duct. So again pressure conversion takes place, only in this case in the opposite direction.

Whereas the static pressure dropped sharply between B to C, it rises between D and E. This rise is conventionally called static regain.

Static pressure does not rise as much between D and E as it fell between B and C because conversion of energy in this abruptly expanding condition is less efficient. A greater amount of total pressure i.e., total energy, was dissipated in the process.

From section E to F, static pressure again falls uniformly. Since atmospheric pressure is used as a reference, static pressure at the duct exit F must be equal to zero.

Since the end of the duct has been reached and there is no further resistance to overcome, static pressure must be atmospheric or, as far as the gauge pressure is concerned, zero.

How Velocity Pressure Varies

During much of section C to D static pressure is less than atmospheric. This can occur because we use atmospheric pressure as a basis from which we measure pressures above or below it. It does not violate any fundamental law of nature.

Since we know that the velocity pressure is

$$\left[\frac{V}{4005}\right]^2,$$

we can forumlate a line of total pressure by simply computing velocity pressure and adding it to static pressure at each point along the duct.

Thus, velocity pressure is represented by the distance between the total and static pressure curves.

Section C to D, being the smaller duct, will have a higher velocity and hence a larger velocity pressure. Therefore, the vertical distance between static and total pressure curves will be greater for section C-D than for A-B.

The total pressure curve decreases from A to B the same amount that static pressure does. There is no change in velocity, hence no change in velocity pressure. As a consequence, the loss in total pressure is represented by the loss in static pressure.

Now between B and C there is only a slight decrease in total pressure. The air is efficiently accelerated. Thus little energy is dissipated.

From C to D total pressure decreases in basically the same manner that it did from B to C.

Expanding Air Abruptly Inefficient

From D to E total pressure drops very sharply. This occurs because expanding air abruptly into a larger duct is an inefficient process. It causes a large amount of energy to be dissipated.

From E to F total pressure decreases. At the exit of the duct total pressure is exactly equal to velocity pressure because static pressure is equal to zero.

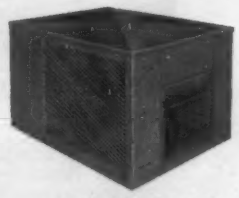
It should be noted that total pressure decreases in the direction of flow. This is a necessary requirement. Otherwise, we would violate the law of con-

You can count on
HIGHER PROFITS
WITH
Curtis
AIR CONDITIONERS

Evaporative Condensers and Cooling Towers up to 100 tons
Air handling units to match.

Packaged Liquid Chillers—7½ to 100 tons—F-12 or F-22. With room console units to provide controlled cooling and heating without duct work.

Packaged air conditioning units—3 through 50 tons.


Packaged Air Cooled Air Conditioning Units—2 through 7½ tons. Residential and commercial applications.

Condensing units up to 100 tons—F-12 or F-22.

HERE'S WHY...

MAXIMUM DEPENDABILITY
Each CURTIS unit is backed by 104 years of engineering and manufacturing experience... one of many reasons why CURTIS air conditioning equipment operates at maximum efficiency with a minimum of maintenance.

CUSTOMER SATISFACTION
The long operational life and minimum service requirements of CURTIS air conditioning, combined with peak performance, assures satisfied customers.

PRE-SOLD PROSPECTS
National advertising beamed at virtually every prospect category helps *pre-sell* Curtis equipment for you. CURTIS provides sales and promotional aids to make your selling job *easier*.

PRICED FOR PROFITS
All Curtis air conditioning equipment is *competitively* priced, with a very generous profit margin *for you!*

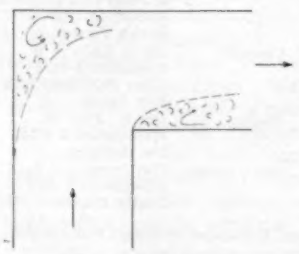
REMEMBER—
you can count on
Curtis
OUR 104th YEAR
MANUFACTURING COMPANY • REFRIGERATION DIVISION
1912 Kienlen Ave., St. Louis 20, Mo.
C-35

Represented in Canada by—T. M. Hall Ltd., 30 Milner St., Montreal West 28, P.Q., Canada

servation of energy. On the other hand, static pressure can increase as well as decrease.

Generally we consider duct systems in terms of static pressures only. The reason is that if velocities at the beginning and end of the system are about the same, then loss in static pressure is the same as the loss in total pressure.

Conventionally, fan ratings are given in terms of static pressure. Thus consideration only of static pressure is ordinarily sufficiently accurate for design purposes. In high velocity duct systems, however, changes in velocity pressure can be of such magnitudes that it should be considered.



TYPICAL FLOW IN ELBOWS

FIGURE 5.

Friction losses are of primary influence in straight sections of duct. Dynamic losses are associated with fittings, such as elbows and transitions. These losses occur as a result of changing either direction or velocity of an air stream.

What occurs when we attempt to change the *direction* of an air stream? Fig. 5 shows flow conditions in a 90° elbow of constant cross sectional area. Function of the elbow is merely to change the direction of flow.

Like all matter, air has inertia and resists efforts to turn from a straight path. If one attempts to take it too sharply around a corner it will not be able to follow the surface.

As the air comes along the inside surface of the elbow it cannot make the sharp right-angle turn. Consequently, it separates from the surface and the main stream follows the curved dashed line.

Between this dashed line and the wall of the duct a void is created. Into it air peels off from the stream and swirls around.

This swirling, or eddying motion, dissipates energy and causes a loss in total pressure to occur. At the outside of the elbow, since the main stream gradually turns to the right, eddies are formed in the outside corner. This also dissipates energy. In general, the amount of energy dissipated at the throat exceeds that at the outside corner.

Rounding the throat of an elbow to eliminate the sharp turn reduces the pressure loss markedly. In general, the more gentle the turn, the lower the energy loss.

Some pressure loss due to friction also occurs in duct fittings. However, when the loss is primarily caused by separation effects, it is termed a dynamic loss.

If a throat radius equal to twice the duct width is used, the pressure loss would be about one seventh of that of the elbow shown in Fig. 5. Hence, considerable reduction in pressure loss can be accomplished by good design of fittings.

A dynamic loss will also occur when only velocity is changed. On the left of Fig. 6, we see a small duct connected abruptly to a larger duct.

As with the elbow, the flow cannot turn sharply up or down as it enters the larger duct. Consequently, it leaves the surface, and turbulent eddies are formed in the corners. Eventually the air expands sufficiently to fill the larger duct completely.

Since the size of the duct is increased, the average velocity has decreased. Slowing of air can be extremely inefficient and can cause large pressure loss.

On the right, flow goes from a larger to a smaller duct. In this case, air is speeded up. Although eddies are generated in the corners of the larger duct, the principal pressure loss occurs in the smaller duct.

FIGURE 6.

Since air leaves the surface of the corner as it enters the smaller duct, the main air stream does not completely fill it. In the process of expanding to fill the smaller duct, turbulent eddies are formed which dissipate energy.

Since in this case we are speeding up an air stream, which is a more efficient process than slowing it down, the loss in an abrupt contraction is less than that of an abrupt expansion under the same conditions.

The key to good design to minimize dynamic losses is to turn air gently or slow it down gently. The ideal is to have air never leave the duct surface.

Conventional practice is to increase the duct width by not more than 1 in. in 7 in. of length.

When speeding up the flow, the transition can be made less gradually by reducing the duct width 1 in. in 4 in. of length. In designing and fabricating fittings, the most important thing is to avoid sharp turns.

(To Be Continued)

What are the fundamentals of air duct and fitting resistance? Why is it important that the air conditioning and heating installer know them?

Knowing them he can do two important things: 1. Design better air conditioning systems. 2. Minimize the number of "trouble" jobs that eat up profits and produce unsatified customers.

Dr. Gilman has already described the consequences of a poor job of evaluating pressure loss. He explained what pressure loss means, defined static and velocity pressures, and told how they are measured.

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AIR CONDITIONING & REFRIGERATION NEWS

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'The Conscience of the Industry'

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They'll Do It Every Time

by Jimmy Hatlo

AT AGE 45, ALL STILLSON TALKED ABOUT WAS TO RETIRE AND DO THE THINGS HE ALWAYS DREAMED OF···
BOY, OH, BOY! WHAT A BEE-YOOT-EE-FUL DAY OUT! I WISH I WAS OLD ENOUGH TO RETIRE—I CAN THINK OF A HUNNERT THINGS I'D LIKE TO DO···GO FISHIN'··· PUT IN A SCIENTIFIC GARDEN··· FOLLOW THE HOME TEAM AROUND—OR JUST PLAIN SIT AND RELAX···
JIMMY HATLO
NOW HE'S 65, THE COMPULSORY RETIREMENT AGE, AND, MY! HOW HIS OUTLOOK HAS CHANGED····
WHY SHOULD I RETIRE? I'M AS GOOD AS I EVER WAS! BETTER, IN FACT! I GOT LOTS OF MILEAGE LEFT IN ME YET! BESIDES, WHAT AM I GOING TO DO WITH MYSELF? I GOT NO HOBBIES···THE ONLY THING I'M INTERESTED IN IS MY JOB! YOU CAN'T DO THIS TO ME!!
THANX AND A TIP OF THE HATLO HAT TO CHAS. WEBSTER, 151 BOUCK ST., TONAWANDA, N.Y.
4-29
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Should You Raise Your Boy To Be A Businessman?

NOT wanting to follow the rigidly rigged footsteps of their Old Country fathers, those solid characters who BUILT America abandoned family and property in Europe to *escape* the frustrating class mold into which they were *caste* over there.

Despite many hardships in "The New World" they pioneered, carved out careers on their own, invented, started small businesses—and made our nation mighty. Nonconformists ruled the day for more than two centuries in the United States. And . . . well, here we are . . . enjoying the highest living standards of all time (despite a temporary slump).

Have youngster Americans abandoned that ruggedly independent, dare-to-be different spirit of individualism? Is the personal spunk which made this country The Greatest losing out to fashionable "running with the herd?" Seems like.

Leading personnel executives from all over the U. S. complain that the Spirit of Free Enterprise (the courage to BE a nonconformer) appears to be dying on an Ivy League vine. It's the herd-runners who cause traffic jams (and raise prices) by doing what everybody else does *simultaneously;* and these conformists appear to be an ominous majority.

At a recent American Management Association conference, personnel executives deplored the "plague of youthful Yes Men who today infest our business world." They testified that junior executives nowadays "seek soft non-productive jobs, and would rather butter up than zip up." Moreover, the Organization Man prefers the comfortable mediocrity of "yessing the Powers" to the personal satisfaction of individualistic achievement.

Whence, then, will arise our future inventors, artists, and communicators?

Our nation "is approaching a depth of conformity which could change our economic standards," warns Melvin H. Baker, chairman of National Gypsum Co. He predicts that unless "yes-man-ship in organization-table-circles" ceases, the future America will be run by men dedicated to "dull patterns."

Ernst Paul furthered: "the executive has changed in most authors' eyes today. Once he was the victimizer of poor Nell, the working gal. Now he's the victim of his own system. The yessed executive is the poor Nell of our times—'more to be pitied than to be blamed.'" Many of our nation's top business leaders express alarm over this bureaucratic-type burial of personalities.

Even though their own personnel managers recruit men who can "play on the management team, and aren't screwballs," the big bosses (who probably were nonconformists themselves before they attained eminence, and donned the dignity of high office) aren't happy about the gray-flannel trend.

As George H. Hupman of General Electric declares: "In selecting an employe, I'm just as concerned about his personality as his technical ability. With so much emphasis on group training and group work, there's a growing need for *non-conformity* to insure progress."

Evidently there are still some individualists who shy away from the current rubber-stamp trend. Matter of fact, euphemisms like "organization man" have scared (or disgusted) high-caliber creative talent away from corporation recruiters who emphasize Emily Post standards.

Among your other ulcer-inducing worries, Mr. Corporation Boss, please ruminate on this one. Are you encouraging a breed-of-cat successors ("yessirs") who aren't a bit like you?

General Electric's Ralph Cordiner predicts that, unless "the current trend toward national conformity is reversed, we will become a race of thought controlled robots." Maybe Orwell's frightening novel, "1968" isn't so far away from reality after all.

Attacking the manner in which corporations suffocate creativeness within their own firms by insisting that "everybody should act like everyone else, and fit into timeclock slots," a University of Michigan report testifies that "concepts of teamwork and group action have been carried to such extremes that individual initiative has been shackled."

It will be a dull world—and a supinely vulnerable America—if corporate conformity conquers personality and the questing mind. Even if our country survives as a nation, businessmen couldn't be proud of their profession, or of their associates, if rubber-stamp-type cliques achieve ultimate power.

"I can foresee the day," glums Willard Chevalier of McGraw-Hill, "when Better People will say, defensively and apologetically: 'Some of my best friends are business executives.'"

OFFERS STATUS SYMBOL FOR AIR CONDITIONING

113 Harrington St.
Mattydale 11, N. Y.

Editor:

Your article of April 7, 1958, "Key to Bigger Profits—Dress Up and Sell Up," stated the need for a status symbol. This need could be met through redesign of the condensing water tower and the air-cooled condenser. These items have, in the past, been hidden in the shrubbery or behind the house; thus, they have become the "ugly ducklings" of the air conditioning industry. Let's take these ugly ducklings, improve their appearance, and give them a place of prominence.

We know that we have to take the water from the water-cooled condenser, expose it to air and remove the heat in order to recirculate it through the condenser. This water could be used to beautify homes as a waterfall, a fountain, or even a running water stream. In addition to the aesthetic value of this it could increase the actual value of the home.

In the dryer sections of the country where water is at a premium, the above suggestions would not be practical, but here the air-cooled condenser offers a challenge. This condenser could be installed on the roof of a house or attached garage under a decorative cupola. An attractive weather vane, carrying the manufacturers symbol, could be attached to the top of the cupola.

Through advertising, people would begin to associate these design features with home cooling, and it would be the status symbol we are looking for.

WALTER H. SIMMONS

LAU PRESIDENT AGREES WITH BALANCING ARTICLE

The Lau Blower Co.
Dayton, Ohio

Editor:

Congratulations on the article "Adjusting, Balancing Year-Round System" appearing in your May 26 issue. This is good for the industry and certainly CAC blower setting is a necessity for the future.

We concur with the statement "The installer's job is not finished until this is done."

T. I. BYRD,
President

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Keep up-to-date on what's going on in your industry. You'll see action weekly in AIR CONDITIONING & REFRIGERATION NEWS. Covers latest news and gives you top how-to-do-it reports on residential, commercial, and industrial air conditioning, heating, and refrigeration for contractors, dealers, consulting engineers, distributors, servicemen, and manufacturers. Read the industry's only newspaper every week—you'll profit by it—only $6.00 per year, 52 issues (U.S. and Canada). Foreign: $10 per year.

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Chicago BHC Drive Strives To 'Bust Out of Recession'

Permanent Program of Education Outlined

CHICAGO—Heating industry leaders here recently announced a plan to "bust out of the recession" through the organization of a Chicago Better Heating-Cooling Council, whose aim would be to increase sales of residential and commercial heating and cooling equipment.

Meeting at the Drake hotel for lunch, representatives of contractor, wholesaler, and manufacturing firms, including Local 597 Pipefitters' Union, made known plans for a permanent program to "educate" homeowners, builders, architects, and engineers to the qualities of hot water heating and compatible cooling systems.

ALL SEGMENTS OF INDUSTRY WORKING

As outlined by newly-elected CBHC President Joseph P. Baldwin, head of the contracting firm bearing his name, the council, which has an initial membership of over 100 firms, is "the first effort by all segments of the industry" to "actually increase business in the Chicago area."

The program, it was explained, would serve to stimulate both the public and the building industry through various means, such as showing an animated cartoon color movie on television, before clubs and associations; the organization of committees to work closely with homebuilders, mechanical engineers, plant and building managers; the formation of a speakers' bureau, and wide distribution of literature.

Paul Kroeschell, president of the Mechanical Contractors Association, agreed that industry leaders in Chicago should not "sit back any longer and let a recession, or slump, or whatever you want to call it, dig any deeper."

SIMILAR COUNCILS IN OTHER CITIES

Keynote speaker R. Edwin Moore, president of Bell & Gossett Co. and a member of the board of directors of the national Better Heating-Cooling Council, said that similar Councils have already been working successfully in Cleveland, Milwaukee, and Philadelphia.

Franklin Greene, executive director of the national BHC, was another speaker.

Other officers elected to serve with President Baldwin were G. W. Bornquist, Bornquist, Inc., vice president, and W. B. Davies, Davies Supply Co., secretary-treasurer.

Elected to serve on the board were the three officers plus John E. Sorenson, Weil-McLain Co.; Roy O. Nelson, Roy O. Nelson Co.; L. E. Rosengren, Columbia Pipe & Supply Co.; H. J. Armstrong, W. C. Morse Heating Supplies; Paul Kroeschell, Kroeschell Engineering Co.; Neal D. Hardy, James W. Hardy, Inc.; and Martin J. Ward, Pipefitters' Association, Local Union 597, U.A.

Negative Air Problem

Curtain of Cool Waste Air Separates YMCA Dining Area from Serving Line

NEW YORK CITY — When given the job of comfort cooling the main cafeteria of the Sloane House YMCA here, William Eden of Billen Engineering Co. was confronted with the problem of designing an installation which would cope with the existing air handling system which was causing a negative pressure in the kitchen.

This negative pressure was a result of make-up air from the ventilation system being pumped into the dining area.

The kitchen was divided from the dining area by a separation wall with large openings. Make-up air for the kitchen required 15,000 c.f.m. A 40-ton Typhoon water-cooled unit was installed to provide 12,000 c.f.m. of which 4,000 c.f.m. was outside air.

YMCA serving line, showing grille at rear wall which permits 4,000 c.f.m. of cool waste air to wash across serving line, providing an air curtain between the dining room and the kitchen.

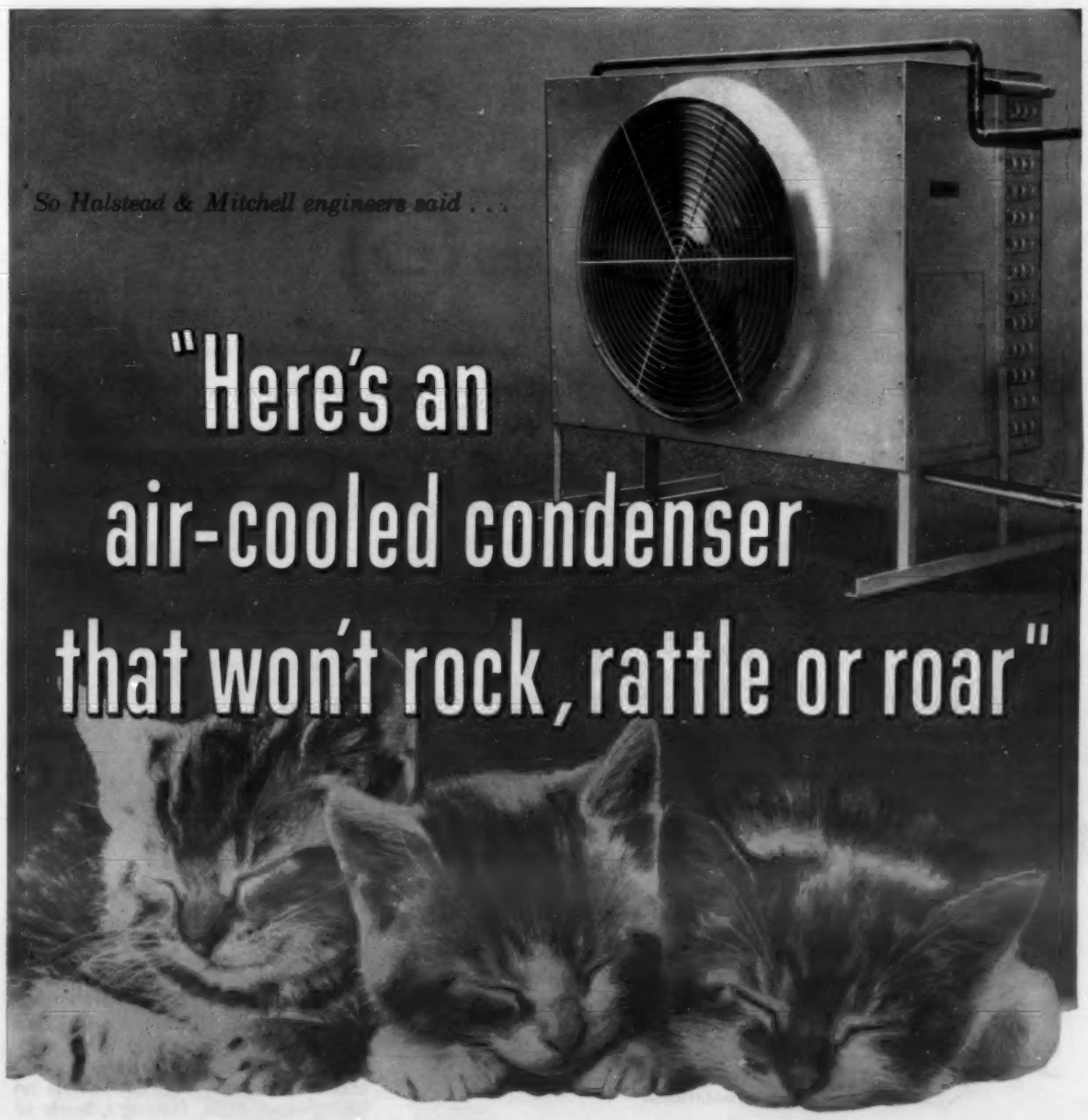
First, all the ventilating air intakes in the dining area were blanked off. Then the ventilating duct was rerouted to supply 11,000 c.f.m. direct to the kitchen area. Next, the 4,000 c.f.m. of cool waste air was allowed to wash along the length of the serving line to the kitchen exhaust system, forming an air curtain between the kitchen-serving area, and the dining room proper.

A 60-ton Goodfellow cooling tower was placed out of doors in a small yard, adjacent to the remote unit. This arrangement simplified maintenance and installation by shortening the piping connections. The evaporator is located indoors, at the south end of the dining room.

The cooling duct runs directly down the center of the length of the cafeteria, with grilles facing to the right and to the left. Ducts also run to three banquet rooms south of the cafeteria.

The banquet areas cause a variable load problem, contingent upon the number of diners at any specific time. The cafeteria manager expressed satisfaction with the variable load handling capabilities of the installation, however.

When the 60-ton cooling tower was installed, it was done to provide sufficient capacity should additional air conditioning be used in the building.



They planned it that way. H&M Air-Cooled Condensers had to be free of the vibrations, rattles and fan noise that plagued so many competitive models. And comments from contractors and users prove they hit their target.

The extra rugged casing won't loosen with use. Lock-tight construction avoids annoying rattles. Four-bladed, deep pitch fans are driven at slow speed for really quiet operation.

Halstead & Mitchell condensers are dependable, too. Large coil and exclusive Turbu-Flo design add more surface, improve heat transfer by up to 15%. Wide fin spacing prevents condenser clogging by dirt or other air-borne particles.

Designed for use with Refrigerants 12 or 22, H&M Air-Cooled Condensers are available in twelve models, from 3 to 50 tons capacity. Floor or ceiling mountings. Multiple circuiting for specified requirements, at no extra cost. Centrifugal Fan models are available for inside installations requiring ductwork.

Ask for H&M Air-Cooled Condensers at your distributors, or write for literature. Halstead & Mitchell, Bessemer Bldg., Pittsburgh 22, Pa.

HM Halstead & Mitchell

Air-Cooled Condensers • Cooling Towers • Water-Cooled Condensers • Finned Coils

FOR MORE INFORMATION ON THE PRODUCTS DESCRIBED ON THIS PAGE
Write Directly to the Company—*at the Address Given in the News Item*

Control Designed To Cut Balancing Costs

A new air conditioning control claimed to cut balancing costs by automatically maintaining uniform air delivery from each air conditioning unit in high pressure induction systems, has been developed by Trane Co., Dept. AC&RN, La Crosse, Wis.

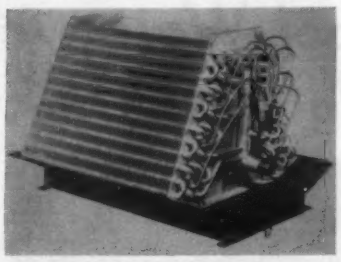
The new device—an air-flow regulator—is an advance that trims installation and operating expenses of "UniTrane" induction air conditioners, the company indicated.

Niagara Offers New Series of Units

Introduction of a new series of units for air conditioning, refrigeration, and heating, engineered for large industrial, food product process and storage, and commercial installations, has been announced by Niagara Blower Co., Dept. AC&RN, 405 Lexington Ave., New York City 17.

Included in this product group are six sizes of fan coolers for both floor and suspended mounting, six sizes of spray coolers for brine or for the "No-Frost" method, "Aeropass" condensers in standard casing and sectional construction offering unit capacities up to 226 tons refrigeration with ammonia and 276 tons with "Freon," the company said.

The line also includes fan (unit) heaters up to a million B.t.u.h. capacities and coil surface type air conditioners up to 14,400 c.f.m. air capacity.



Krack Coil Converts Forced Air Furnaces

Especially designed to convert forced air furnace duct systems to summer cooling service is a new Krack furnace bonnet air conditioning coil manufactured by Refrigeration Appliances, Inc., Dept. AC&RN, 923 W. Lake St., Chicago 7.

A compact V-bank arrangement of high efficiency coils, the new unit is easily included in new residential systems and also added to existing installations, the company said.

Five models offer 24,000, 36,000 and 60,000, 72,000, and 90,000 B.t.u.h. nominal capacities, respectively, it was stated. Tubing is copper electro tin-plated, and fins are multi-tube type heavy-gauge

York Conditioners Offer Space Savings

A new line of fan-coil air conditioners designed for "flexible space-saving low-cost" installations in multi-room commercial buildings has been developed by York Corp., Dept. AC&RN, York, Pa.

Year-round individual room comfort conditioning is provided by a variety of floor, wall, or ceiling units connected into central chilled water cooling and hot water heating systems. Units are available in 200, 300, 450, and 600 c.f.m. models.

Positive temperature control is said to be insured by a three-speed fan switch and by a choice of manual, automatic self-contained or pneumatic water controls. Outside-air louvers, specially designed by York, are available for fresh air ventilation with all floor models.

It is claimed that York hanger rails allow one man to slip a ceiling model into position quickly and accurately. A feature on all York fan-coil units is a reversible coil which provides for either right or left-hand hook-up. Wall-type models are hung above baseboards.

Gas Tool Reaches Hard-to-Get-at Welds

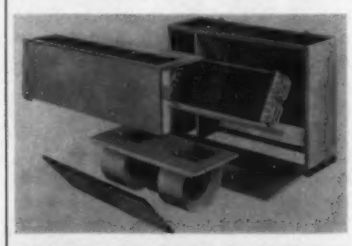
A metal arc inert gas tool designed for short-length welds in hard to get at places has been introduced by Air Reduction Co., Inc., Dept. AC&RN, 150 E. 42nd St., New York City 17.

Called the "MIGet Aircomatic" gun and control cabinet, it feeds wire up to 900 in. per minute. Drive rolls and wire supply are contained in the gun.

With pistol grip and trigger switch, the gun weighs 3 lbs. without wire supply. It measures 14½ in. from front to rear, 7⅞ in. high, and 5¼ in. at widest part.

A wire feeder, joined to the control cabinet by a flexible cable assembly, contains wire feed speed selector and welding wire supply.

Control cabinet contains electrical components that coordinate wire feed with shielding gas and cooling water flow and welding current. Welding power source must be a d.c. machine.



Cabinet Heater Line Features Broad Range

A redesigned line of cabinet heaters that permits selection of a broad range of hot water and steam ratings is now available from American Blower Div., American-Standard, Dept. ACRN, 8111 Tireman Ave., Detroit 32.

New units are offered in seven basic unit sizes; the cabinets permit a choice of seven colors to blend with any interior design or color scheme.

One and two-row heating elements (equally suitable for steam or hot water) and a three-row hot water element are available for each size. This flexibility permits selection of 21 hot water ratings and 14 steam ratings.

Are You Paying Premium Prices For Your Pipe Wrapping?

Now...cut costs, reduce inventories and *profit* more with the one standard insulation that fits every pipe and fitting, meets *every* service requirement!

THREE INSULATING BARRIERS in
NO Drip TAPE
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Rough surface prevents free circulation of moisture-filled air—creates dead air barrier.
2. ¼-INCH THICKNESS
Built-in moisture barrier assures utmost insulating efficiency.
3. INSIDE
Dead air is trapped between "corrugated strands", forms added insulation barrier.

NoDrip Tape means more profit, less work on every job . . . saves you time, labor, material. NoDrip Tape eliminates most multiple wrappings needed with thinner wraps . . . inferior wraps.

Why pay more when you can buy the handy 16 foot roll of ¼" thick NoDrip Tape at less than half the cost of a roll of ordinary ⅛" wrapping...and *far* below the cost of pre-formed foam cellular insulations?

Next time an equipment cold line job calls for *permanent* protection against condensation drip, "sweating" or frost, insist on using NoDrip Tape. Stops rust and corrosion, too . . . holds temperatures more constant and increases the efficiency of the cooling equipment.

NoDrip Tape is pliable, cork-filled and completely self-adhering. Easy to work with . . . forms an air-tight, 100% vapor and moisture proof jacket. Needs no tools, vapor seals, fasteners, brads or adhesives.

NO DRIP PLASTIC COATING... PROTECTION FOR BIG AREAS

For large pipes, tanks, air ducts, we recommend NoDrip Plastic Coating for permanent protection from condensation, rust and corrosion. Another fine Mortell refrigeration product, NoDrip can easily be applied by brush or trowel to metal, concrete, brick, plaster, tile or composition surfaces.

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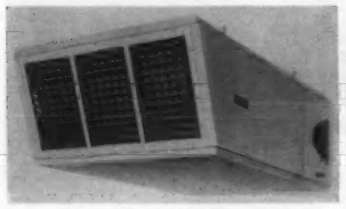


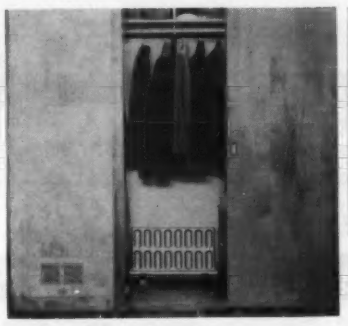
7½-Hp. Conditioner Features Flexibility

A 7½-hp. air-cooled air conditioning unit for homes, stores, and offices which features flexible air distributing ability has been announced by the Heating & Air Conditioning Div. of Stewart-Warner Corp., Dept. AC&RN, Lebanon, Ind.

As an addition to the "Custom Series" of pre-charged thermal expansion units, two new models are available as free standing or horizontal ceiling suspended units.

Free standing units are also available as air or water-cooled units in 2, 3, or 5-hp. models and are used with remote condensing units of corresponding capacities. The 7½-hp. models are air cooled only; having a cooling capacity of 84,000 B.t.u., and require a three-phase electrical outlet, it was explained.

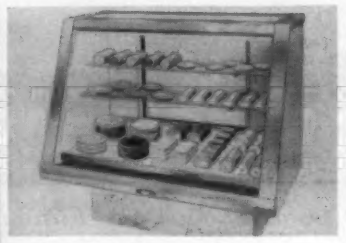
The remote condensing units are installed outside the home or building. No foundation is needed with the "quick set-up" mounting of the unit, according to the company.



Closet Heater Protects Clothes from Mildew

A completely new type electric heater has been produced for closets and storage areas by Skuttle Mfg. Co., Dept. AC&RN, Milford, Mich.

The dry heat protects clothes and stored articles from mildew and other damage due to dampness, it was stated. Radiator-type unit is of thin-line design requiring the minimum of space. Two model sizes are available.



Low Temp Case Has Glass Front, Top

A new low temperature case with glass front and top for the display of frozen bakery products, ice cream novelties, and frozen specialties and desserts has been introduced by The C. Schmidt Co., Dept. AC&RN, 1712 John St., Cincinnati 14.

The case is engineered for ice cream and will maintain temperatures from 10° to 15° below zero, the company said.

It is available in one size—4¾ ft. long, 31¾ in. deep, and 50 in. high.

Versatility Highlights Leak Detector Line

Claimed increased versatility highlights a new complete line of halogen-type leak detectors announced by General Electric Co., Instrument Dept., Dept. AC&RN, West Lynn, Mass.

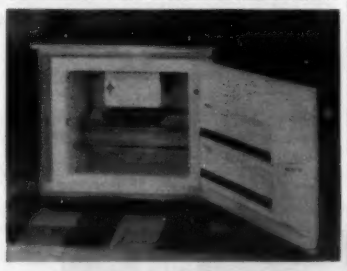
Featuring four detector heads for use with one standard control unit, the series replaces type H-1 model. They are designated type H-2, H-3, H-4, and H-5.

Eave Attic Fan Ups Home Unit Efficiency

An eave attic vent fan that can be installed in any eave with a 20-in. or larger overhang, is being manufactured by Phil Rich Fan Mfg. Co., Dept. AC&RN, 2900 Caroline St., Houston 4, Texas.

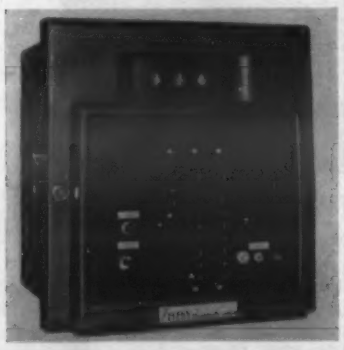
Called the "Windmaker" EAV fan, it is available in 16 and 20-in. blade sizes with capacities of 1,700 and 2,400 c.f.m.

The EAV fan is designed specifically to increase the efficiency of residential air conditioning units by forced ventilation of attic areas.



Under-Counter Models

ADDITION to its built-in line of refrigeration equipment of two new under-the-counter models has been announced by Sub-Zero Freezer Co., Inc., Dept. AC&RN, P.O. Box 2017, Madison, Wis. The refrigerator model is 6.3 cu. ft. in size and freezer has a capacity of 6 cu. ft. Both models are 34½ by 36 by 24 in. deep.



Monitors Temperatures In Storage Plants

Development of a new and completely electronic centralized temperature system for meat packers and cold storage plants was recently announced by Zeleny Industrial Systems, Inc., Dept. AC&RN, 214 Third St., Des Moines, Iowa.

This system was designed and engineered to meet the requirements for monitoring temperatures in meat packing and cold storage plants.

Fundamentally, this all-new electronic system is designed to cut labor costs and at the same time provide more complete and accurate information on storage conditions, the company said.

FOR BIGGER PROFITS IN '58...

SELL SCOTSMAN'S GOLDEN 50!

YOU MAKE MORE MONEY with Scotsman because you can offer the right ice machine to *fit any ice need!* You have *more* to offer prospects—50 Super Flakers, Super Cubers, Bins and Dispensers—*more* places to cash in on the Scotsman line!

AND SCOTSMAN HELPS YOU sell these prospects! Effective national ads . . . a new book, "How to Use an Ice Machine" to leave with prospects . . . deluxe brochures . . . new ad mats . . . direct mail pieces . . . a sensational new demonstration kit . . . *everything* you need to make Scotsman Ice Machine sales.

AND DON'T FORGET: As a Scotsman dealer, you're backed by a national organization devoted *entirely* to ice machine sales and service. Ice machines are the mainline—not a sideline!

BECOME A SCOTSMAN DEALER . . . get your share of the big profits. Send coupon for complete details today!

Send me complete information about a dealer franchise for Scotsman Ice Machines.

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Subsidiary of KING-SEELEY Corporation

What's Going On in Commercial Refrigeration

News of Markets, Products, Methods

Advantages of Mounting Milk Cooler On Concrete Island Cited

ROYERSFORD, Pa.—A "new method" of installing bulk milk coolers directly on concrete islands in the milk house is finding "quick acceptance" among the nation's milk producers, according to F. C. Ortner, general sales manager of Haverly Equipment Div., John Wood Co.

Developed by Haverly, bulk milk coolers on concrete islands eliminate several old problems of long standing, he said.

Mounting the new type cooler on a raised concrete island, instead of on legs, distributes the weight over the entire cabinet bottom, and reduces the stress to a few pounds per square inch, it was stated. This better distribution of weight gives assurance that the tank will remain level throughout its life, according to Ortner.

"Cleaning the milk house is greatly simplified by island-mounted coolers, which eliminate the under-the-tank area," it was pointed out. "The Haverly cooler is sealed to its concrete island by use of an industrial waterproof adhesive, effectively eliminating any accumulation of filth, and the need for back-bending cleaning.

"Haverly field experiments, investigations conducted in company with sanitarians, have shown that no moisture penetrates such cooler bottoms, even after a number of years' usage.

"There are other advantages, too. Lower height of cabinet means lower pour-in point and easier cleaning of milk liner."

Series of 'Snafus' Snarls Buffalo's $1 Million Artificial Ice Rink Program

BUFFALO — A series of "snafus" in the city's $1-million artificial ice skating rink program is adding up to a king-sized headache for the Buffalo Parks Department.

The program, marked by construction and operation difficulties, has been under heavy fire in the Common Council.

At least two of the six artificial rinks built since 1955 are beset with a variety of difficulties that will take thousands of dollars to overcome, it was reported.

Plastic pipes that carry a brine solution used to freeze one rink have expanded and twisted into spaghetti-like patterns.

Buildings Div. officials say the pipes will have to be refitted and relaid at an estimated cost of $25,000.

The black, plastic pipe is laid on a sand base on the rink and is exposed.

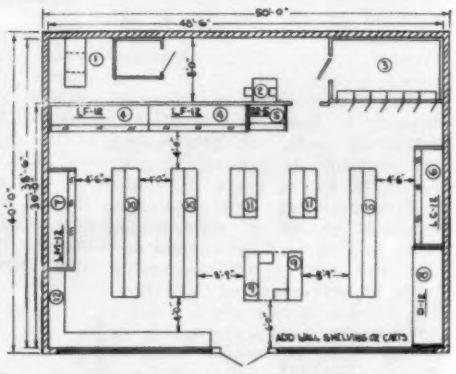
Booklet Outlines Fundamentals

How To Lay Out Pint-Size 'Quickie' Market To Cater to Small Order Customers

ST. LOUIS—Latest development in the retail food field is a trend to pint-size "quickie" markets catering to traffic that the supermarkets miss.

Hussmann Refrigeration, Inc. is so interested in the prospects of refrigeration equipment sales to this market that it has published a booklet outlining the "Fundamentals of the Quick-Shop Food Drive-In."

It is also conducting an advertising campaign calling this trend to the attention of the food industry. R. E. Stephenson, advertising manager, reports "tremendous response" to this advertising.



FLOOR PLAN shows a typical layout for a convenience-type drive-in market. Circled numbers indicate equipment suggested by Hussmann Refrigeration, Inc. They are: (1) Compressor room, (2) air conditioning and heating, (3) walk-in cooler, (4) frozen food cases, (5) merchandiser, (6) ice cream case, (7) frozen meat case, (8) dairy and delicatessen case, (9) manual checkouts, (10-11) island shelving, (12) wall shelving.

CATER TO SHOPPERS WHO ARE IN A HURRY

These small stores, according to Hussmann, are more like drive-in sandwich shops than superettes. They cater to people who want to buy a few things in a hurry at odd times rather than going after the shopper's complete order.

They do most of their volume after 6 p.m. or on Sunday and stay open long hours. They are equipped and laid out so that they can be operated by one or two persons, becoming, thus, the modern "mom and pop" store.

As described in the Hussmann manual, a typical convenience store would be a building 50 or 60 ft. wide by 40 ft. deep on a 127 by 137-ft. lot. This would provide off-street parking for 20 or 30 cars.

REQUIRE VARIETY OF REFRIGERATED CASES

To the commercial refrigeration distributor, such a store would present a market for a 12-ft. self-service frozen meat case, a 12-ft. dairy case, a 12-ft. ice cream self-service case, a 24-ft. self-service frozen food case, 5 ft. of supplemental refrigerated shelving, an 8 by 14-ft. walk-in cooler with merchandising front, and five condensing units to operate the above equipment.

It would also include three 16-ft. runs and two 6-ft. runs of island shelving and 26 ft. of wall shelving, a U-shaped checkout, and a cash register.

And there would be air conditioning and heating.

Merchandising practices are geared to convenience, the Hussmann manual says. "Generally they carry a very complete variety of grocery items, must limit duplicate brands and facings to conserve space.

"Their sales are usually heavy in frozen foods, particularly in convenience and prepared frozen food items. Ice cream sales are heavy.

"The trend is away from fresh red meats, thus eliminating the need for a meat cutter in the store. They do carry a wide line of frozen meat items —the specialty items such as frozen minute-steaks, hamburgers, frozen cooked meats, etc.

"Packer-wrapped, table-ready meats are a popular convenience item, as are other packaged items in the cheese and delicatessen line.

(Concluded on next page)

For Your Reprint Copy

"Emergency Diagnosis, Repair of Hermetic Unit Electric Components," by John L. Zant, mail this ad with your name and address to: Air Conditioning & Refrigeration News, 450 W. Fort, Detroit 26, Mich.

Only 25¢ each.

2,430 FROZEN FOOD PACKS

and two-side shopping in Warren's new Twin-Isle!*

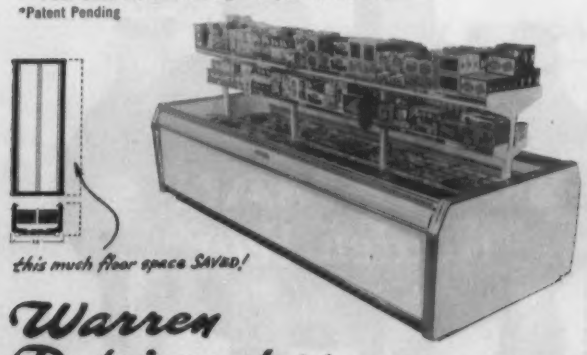
Maximum capacity in minimum floor space was the problem presented to Warren by retailers everywhere, and 76 years of experience and research paid off again—with the space-saving, big-capacity Twin-Isle Merchandiser.

The Twin-Isle offers two-side shopping from **two** compartments **—yet one refrigerator**—holds 2,430 frozen-food packs or 2,160 pints of ice cream, and is only 58" wide over-all. Offers twice the variety of a conventional low-temperature display case!

Lower total investment in cases themselves, less comparable horsepower per lineal foot, *installation costs cut in half*, and a drastic reduction in cost of operation. Another fine example of product result from Warren's CONTINUOUS RESEARCH Program.

- COLORAMICS® Bands optional at no extra cost.
- Four-shelf merchandising canopies available.

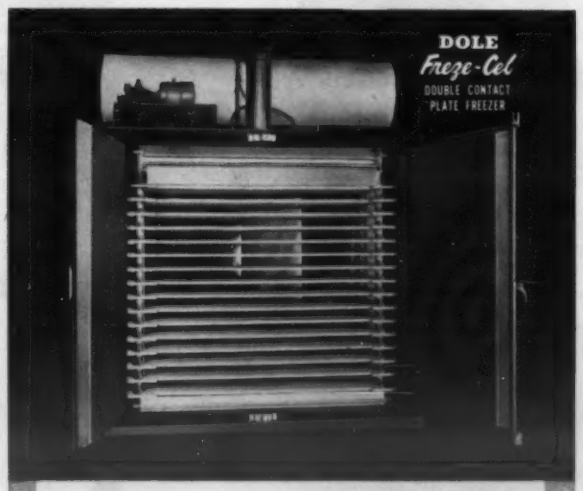
*Patent Pending



this much floor space SAVED!

Warren Refrigerators BOX 1435 • ATLANTA 1, GEORGIA

EXPORT DIVISION: P. O. BOX 27884, LOS ANGELES, CAL.



Faster Freezing of Packaged Foods!

- Convenient "pass-through" operation
- Special square tube Vacuum Cold Plates
- Available with or without cabinet

DOLE REFRIGERATING COMPANY

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Dole Refrigerating Products Limited, 29 Brock St., N., Oakville, Ont.

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Freze-Cel DOUBLE CONTACT PLATE FREEZER

DOLE THE Cel LINE

A. H. BROMANN JR. INC. - REFRIGERATION

Custom Quality Walk-in that Includes NEW MONEY SAVING Construction Methods

Over 60 years of experience has gone into developing new construction methods that result in savings on list price. Some of the custom features include: button nail design . . . expandables in 26" multiples . . . full 3⅝" fiber glass insulation . . . ¾" kiln dried fir . . . new sectional locking devices . . . clamp nail frame construction. . . .

WRITE TO—A. H. BROMANN JR. INC.—Schiller Park, Illinois

'Quickie'--

(Concluded from preceding page)

"Other convenience items are heavily reflected in sales. Coolers are used to facilitate heavy sales in chilled beverages, milk, etc., and to handle such high volume seasonal items as cold watermelon.

"Produce is generally limited to high demand and convenience items. Most are packaged to prolong freshness and facilitate quick service.

"Merchandising shelving is recommended above all applicable refrigerated display cases to provide maximum useable display area."

Hussmann sees an equipment investment of $17,000 to $20,000, with total investment running into the neighborhood of $60,000, depending upon location.

Maintaining competitive prices, but scorning loss leaders, these stores can realize a gross profit of between 18 and 25% and net profits ranging from 4 to 8% before taxes.

Alexander Heads RACCA Convention Committee

CLEVELAND—Charles Walling, president of Refrigeration & Air Conditioning Contractors Association, has announced appointment of Tom Alexander of T. C. Alexander Co., Denver, chairman of the RACCA convention committee for the 1958 convention to be held in the Broadmoor hotel, Colorado Springs, Colo., Oct. 12-15.

Other members of the convention committee are Jack Lang, president of RACCA of Northern California (San Francisco) and Don Kissell, president of RACCA of Southern California, Inc. (Los Angeles).

This group will work closely with Ray Kromer, executive vice president of RACCA headquartered here, in developing a "progressive and informative annual meeting."

Limited displays of "What's New in the Industry" will be available to manufacturers who wish to display new and different products, Kromer pointed out.

The annual trade relations program, in which manufacturers and wholesalers participate in social functions, will be expanded for the event this year, he said.

Already in the process of developing a program for wives of members and guests is the ladies' committee. Denver and west coast associations have promised this event "will be the outstanding one in RACCA history," Kromer added.

Durham Store Drops Outdoor Vendor Trial

DURHAM, N. C.—Mechanical failures brought to an end a 10-month trial of outdoor vending machines at Colonial Stores Broad St. supermarket here, according to J. E. Coffield, market manager.

The six vendors, encased in an aluminum housing, were set up in the store's parking lot. They sold packaged eggs, meat, bread, and other items.

California 'Grocers Advocate' Advises

Advertise: Eggs Kept Under Refrigeration

SAN FRANCISCO—"There is no faster way to build volume with faster turnover and greater profit on eggs than by giving eggs the proper attention they deserve and to advertise the fact that your eggs are kept under refrigeration and sold from refrigerated cases only to insure freshness," the weekly *California Grocers Advocate* advised grocers in this locality recently.

"Many retailers have reported steady increase in egg sales since they are kept under refrigeration, plus the fact that all complaints against this product have been eliminated," the publication went on to explain to its readers.

Its article pointed out that almost all housewives keep their eggs under refrigeration and that egg distributors have learned the need of keeping eggs cool up to the time of delivery to the store. They go to considerable expense to protect the freshness.

It added that the U. S. Department of Agriculture recommends that eggs be kept cool in order to protect their fragile freshness.

"At 70 to 80° F.," it said, "eggs may drop in quality in a few days; at higher temperature, more rapidly. Eggs left in a hot car or kitchen for a few hours will lose their quality rapidly."

AMBASSADOR WITH TOOLBOX

THE MAN WHO INSTALLS AND SERVICES HUSSMANN EQUIPMENT

His briefcase is a toolbox . . . his top hat has a bill. But he's a full-fledged ambassador . . . a man who builds good will.

This man in the field is a mighty important link between Hussmann and the food store merchant.

His skillful installation work builds confidence in Hussmann and Hussmann distributors.

The service he renders in the years that follow . . . creates good will and keeps the customer happy with Hussmann.

His pleasant way of dealing with Mr. Merchant makes friends for Hussmann, too.

Hussmann salutes the refrigeration service man . . . the ambassador of good will who helps turn prospects into customers and brings customers back to buy again.

HUSSMANN

HUSSMANN REFRIGERATION, INC., HUSSMANN BUILDING, ST. LOUIS 6, MISSOURI
HUSSMANN REFRIGERATOR CO., LIMITED, BRANTFORD, ONTARIO, CANADA

STORAGE AND DISPLAY REFRIGERATORS • CHECKOUTS • SHELVING • REFRIGERATION FOR FOOD STORES LARGE OR SMALL

NCRSA Members Report Pick-Up--

(Concluded from Page 1)

store construction is slow, remodeling, concentration on air conditioning, servue-doors, all types of supplementary store equipment, servicing, etc., in addition to refrigerator case sales is keeping business brisk.

A meeting of the joint relations committee, composed of representatives of NCRSA and the Commercial Refrigerator Manufacturers Association, discussed the trend toward mergers of smaller chains with larger chains and the effect on the future of distributors.

Distributor Functions Must Be Performed

Chairman George Wiedemer, president of Cable-Wiedemer, Inc., pointed out that the functions of the distributor must be performed whether the equipment is sold direct to these chains or through distributors.

If a customer purchases direct, the manufacturer or the food store has too assume these functions, he asserted. The cost to either is excessive. Furthermore, he added, the functions are generally not as well performed as by the distributor.

Harry Hattenbach, NCRSA president, said, "Paying the difference in price is often the cheapest way."

He explained that the end result of the direct sale to a small chain may leave the manufacturer with a profitless deal and the customer either paying more in the end or getting less service and satisfaction.

Distributors recommended that manufacturers carefully analyze their added costs in such sales. They suggested manufacturers consider on an individual basis the cost of field engineering service, warranty costs, insurance to protect against error in installation, hiring and supervising contractors, and numerous other costs arising in such sales.

Manufacturers, on the other hand, affirmed their belief that selling through the distributor is the best type of outlet for a large percentage of their production where possible.

They recommended that NCRSA and members individually do everything possible to emphasize the importance of distributor services to the customer and making his purchases through them.

Examples were cited of instances where this has been done successfully, even in the face of competitive manufacturer bids.

Manufacturers also recommend that where mergers may place chains out of the distributor's range on case sales, he actively solicits their servicing. There are substantial sales of parts and equipment involved that would be profitable business in addition to the service contract, they pointed out.

Asks for Education on High Voltage Lines

The dangers and problems involved when power companies put high line voltages in food stores was broupht up by Ray Greene, sales manager of Tyler Refrigeration, Inc.

Ordinarily used in industrial plants, this high voltage electric power is being supplied quite frequently now to food stores, he said.

This is more dangerous to customers and to store employes, he noted, and maintenance becomes more difficult and controls more costly.

He recommended that NCRSA develop information on this and present it to food store organizations.

Milton Schwartz, chairman of NCRSA membership activities, reported that 25 new members have been enrolled so far this year. A goal of 100 for 1958 has been set.

Get your copy

Operating Costs of Residential Air Conditioning and What This Means to Dealers and Installers. By R. A. Gonzales—25¢ each.

Mail this ad with your name and address to: Air Conditioning & Refrigeration News, 450 W. Fort St., Detroit 26, Mich.

Remove Scale quickly and safely with anco CONDENSER CLEANER

You simply dissolve ANCO Condenser Cleaner in the sump while the system is in operation for effective results. Within 2 to 15 hours, depending on the thickness of the scale, the condenser tubes are cleaned. High head pressure caused by fouled tubes drops to normal and operating efficiency is restored. ANCO Condenser Cleaner can be safely used without damage to metals and is not hazardous to handle. Try it once and you'll use it always.

Keep cooling towers free of algae and slime with **ANCO Algaecide.**

Protect condenser against rust, scale and pitting with **ANCO Water Treatment.**

For all ANCO products see your wholesaler or write direct.

SPECIALISTS IN MAKING WATER BEHAVE

Anderson Chemical Company, Inc.

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SCOTSMAN DEALERS ATTENTION

Special 600 lb. bin for the 500 lb. cuber—**$215.00**

WITH EXTRA SHOVEL-OUT DOOR—on 14" legs

Same bin for FLAKERS SF-1F; 2F; 3F; 5E

Stock and special bins go to 5,000 lbs.

THESE "SPACE SAVER" bins go UNDER THE ICEMAKERS, not alongside

500 lb. bin for 200 lb. Frigidaire cuber—$220.00 (chute included)

Clawson "Hail King" for crushing or flaking cubes—$84.00

Ice computed at 30 lbs. per cu. ft.—f.o.b. Brooklyn, N.Y.—chutes extra $20.00 up

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MORE OF EVERYTHING WITH THE COMPLETE LINE FROM LA CROSSE

DIRECT DRAW

Refrigerated faucets . . . guarantee perfect beer temperature. No excess foam . . . a perfect glass of beer every time. No morning "draw off" . . . eliminate waste. Compare first . . . you'll find La Crosse Direct Draw tops in design, engineering and efficiency.

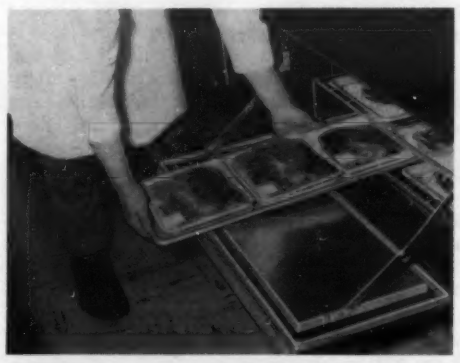
LA CROSSE COOLER COMPANY

3000 LOSEY BOULEVARD SOUTH, LA CROSSE, WISCONSIN

EXPORT OFFICE • 125 BROAD ST., NEW YORK • CABLE EXIMPORT

Tyler Introduces 3 Commercial Cases

Twist of Dial Converts from Low Temp To Normal Temp In 6-ft. Spot Merchandiser



EASY-WORK accessible storage is a feature of the new Tyler double-duty meat sales-case. Meat platters easily slide in . . . slide out, fast. Big, new Flip-Down Doors form handy platform for loaded platters. Now, removable, double-tier platter racks are available as optional.

NEW TYLER 4-ft. display length, self-contained adjustable-shelf sales-case features 40% more cu. ft. display and sales area; unique top-mounted condensing unit, and is ready to install and use.

NILES, Mich.—Tyler Refrigeration Corp. has introduced three new commercial refrigeration cases in its 1958 line.

A new improved 6-ft. self-contained dual-temperature display sales-case is featured as an all purpose spot merchandiser. By a twist of the dial, this new model converts from zero to normal temperature. It is designed for mass display, fast turnover, and speedy self-service sales of frozen food, ice cream, fresh and table-ready meats, dairy products, cheese, bottled beverages, according to Robert L. Tyler, president.

New 4-ft. self-contained adjustable-shelf sales case features increased capacity and top-mounted condensing unit, Tyler said. Ready to install, this new model YSRS4 is claimed to offer 40% more cu. ft. display area because of the top-mounted condensing unit. Designed for use as a spot or end-of-gondola specialty merchandiser, it has a shelf-area of 20 sq. ft. and display area of 27 cu. ft.

Double-duty meat case features improved sales and storage flexibility, greatly increased capacity, easier storage compartment access with new "Flip-Down" storage doors.

Barrier between display and storage compartments has been eliminated. Only removable display screens or trays divide the two. This is said to provide a wider range of merchandising possibilities and maximum capacity.

Dual-temp unit comes ready to install with only one electrical connection needed. No plumbing or drain is necessary. It offers 14-cu. ft. capacity to hold 600 packages of frozen food or 720 pints of ice cream or 170 half-gallon ice cream cartons. Display compartment measures 13 in. high.

Models are available for island or wall use. Island unit is 38 in. high in front. Wall model, also 38 in. high, comes with or without superstructure.

On the 4-ft. adjustable-shelf model the 12 and 18-in. shelves are adjustable on 2-in. centers.

By removing the screen or tray sections along the double-duty meat case lineup the operator can pile packaged meats from storage floor all the way up. By removing one or two packages, the operator can look directly through display screens for instant check of reserves.

Flip-Down doors open with flick of the finger, shut with a tap of the foot. They cannot be left ajar because of spring-loaded hinges. Compartment base is 12 in. off the floor and mass display can be obtained by adjusting screens or trays. Now available in 8 and 12-ft. lengths, cases offer double-tier platter racks as optional equipment.

MARSH Instruments

THE SERVICEMAN LINE of Testing Gauges, Testing Thermometers, Timers, etc.

PRESSURE GAUGES and Dial Thermometers for all services.

MARSH-ELECTRIMATIC, Water Regulating Valves, Solenoid Valves.

MARSH INSTRUMENT COMPANY

Sales Affiliate of Jas. P. Marsh Corporation

Dept. D., Skokie, Ill.

DEAN COLD PLATES for Ice Bank Air Conditioning

MANY SHAPES MANY SIZES MANY METALS

Job-Tailored

to your exact size requirements, Dean Cold Plates are low in first cost and in operating costs. Write for catalog.

DEAN PRODUCTS, INC.

1042 DEAN STREET

BROOKLYN 38, N.Y.

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Choice territories now available for sales representation. Inquiries invited.

CRMA Plant Tour

McCray Materials Handling, Production Control Methods Form Main Topics of Discussion

KENDALLVILLE, Ind. — New approaches to materials handling, incentive programs for labors, and production forecasting were brought to the fore during the recent Commercial Refrigerator Manufacturers Association production conference and plant tour, to which McCray Refrigerator Co., Inc. here played host.

The largest gathering to participate in a plant tour since the inception of this unique program by the CRMA made the trip through the McCray plant in small groups. During the course of the tour each department was visited and the operations observed were explained by members of the McCray production staff assigned as guides.

At the production conference following the plant tour, with John R. Caulk, Jr., executive vice president, Hussmann Refrigerator Co., acting as moderator, discussions were opened with an evaluation of the McCray plant operations by a preassigned team, composed by M. K. Ballard, operations vice president, Sherer-Gillett; Don Smiley, operations vice president, Weber Showcase & Fixture Co.; L. C. Whitsit, works manager, Friedrich Refrigerators, and Glen J. Doyle, vice president, C. V. Hill & Co.

The production experts found materials handling and production control methods particularly commendable, and made these points about them:

Material-Holding Racks at All Points

Each department had material-holding racks or similar devices which held all of the materials which would go onto the product at that particular point in the production or assembly process. This also served to reduce the amount of warehousing space necessary.

With production control through dispatching centers, there were no breeding grounds for shunting aside materials.

With production lines set up to permit individual lines to handle a single type of product, the possibility of bottlenecks in production-line operations was greatly minimized.

Then in a question-and-answer period, with McCray officials including J. W. Krall, president; E. J. Andrysiak, works manager; and vice presidents W. R. Clouse and G. K. Bently answering the questions, the commercial refrigeration manufacturer executives delved into McCray's production operating philosophies and methods.

The relationship of production planning to sales forecasting, a tricky matter in the present-day market, was explored quite fully. At McCray a monthly forecast by model is prepared, but actual production is begun only on a basis of incoming orders. Raw materials, paint requirements, and most purchase parts are tied directly to the pattern of incoming orders.

Considerable Lead Time On Large Orders

One reason this is possible, it was pointed out, is that many of the orders are tied specifically to a new or remodeling project—such as a supermarket or shopping center—and this affords a considerable amount of lead time for production of the specified equipment.

Incoming orders are totaled each week, and from these a production order is released for "X" number of "X" models of equipment. This production order will also specify the parts needed for the assembly.

In materials handling and the movement of parts, continuing effort is made to convert indirect to direct labor whenever possible, and to cut out all unnecessary movement of parts and materials, McCray officials pointed out.

In the McCray incentive wage plan, each piece on which labor is performed has a chart which gives the standard of performance, and on which records are kept. The entire incentive plan is on an individual rather than a group plan.

Inspection is carried out by spot checking of individual operations, and also by inspection stations in departments such as sheet metal, shells, paint line, and all assembly lines.

Blueprints are provided at the various inspection stations, and the quality control headquarters has one complete set of blueprints for everything that is going through the plant.

These are some of the points made about the operation of the incentive plan, following questioning by the industry executives:

If an individual worker doesn't earn his base pay, it

(Concluded on Page 25, Col. 3)

Your Customers' Best Buy. . .
(and yours, too!)
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unexcelled storage capacity with Ice Cube Makers
OUTSTANDING SECTIONAL METAL WALK-IN COOLERS
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NOW...FROM REMCO
MOLECULAR SIEVE FILTER-DRIERS
WITH DEPTH FILTRATION

Utilizing advanced design Molecular Sieve cartridges, these new Remco Filter-Driers combine unequalled drying efficiency, effective acid removal, generous flow capacity and *depth* filtration.

The massive depth filter completely removes all scale, sludge, carbon and other particles as small as 100 microns, without affecting flow or pressure drop. In addition, there's a fine mesh outlet screen.

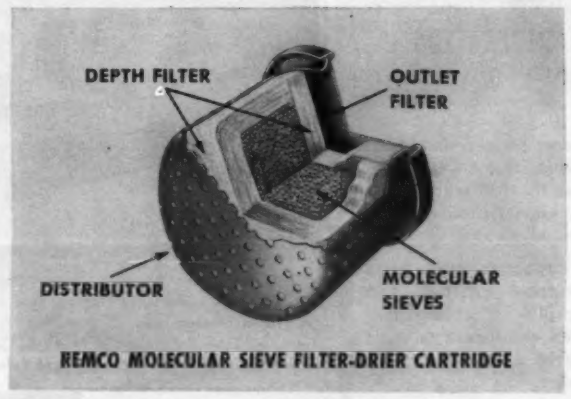
Large quantities of moisture are adsorbed and retained even at refrigerant temperatures of 140 F. Moisture concentrations are held to 10 p.p.m. or less, and acids reduced far below dangerous corrosion limits. Refrigerant and oil are not adsorbed.

Compact in size, Remco Molecular Sieve Filter-Driers are great space savers and work equally well in the hot machine compartment, the refrigerated space, or a hot equipment room. U/L Approved, the working pressure is 500 p.s.i.; minimum bursting pressure, 2500 p.s.i. The filter-driers may be used for Refrigerants 12 or 22, Carrene, or methyl chloride.

REPLACEABLE CARTRIDGE TYPE units come in 3 basic sizes and have a single cartridge which can be easily installed or replaced. An "O" ring provides a positive, leakproof flange seal. From 3 to 40 tons with ⅜" thru 1⅝" sweat connections.

SEALED TYPE filter-driers are available in 4 basic sizes, 1 to 12 tons, with ¼" thru ⅜" flare and ⅜" thru ⅞" sweat connections.

"T" FITTING TYPE supplied in 2 basic sizes, 2 to 6 tons, bring all the advantages of Remco Molecular Sieve Filter-Driers to systems having standard "T" fittings.



REMCO MOLECULAR SIEVE FILTER-DRIER CARTRIDGE

Remco Filter-Driers are available at leading wholesalers everywhere. Ask your wholesaler for more information, or write for Bulletin MS-1. Remco, Inc., Zelienople, Pa.

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MANUFACTURERS OF ADVANCED REFRIGERATION PRODUCTS
FILTER-DRIERS · LIQUID INDICATORS · RECEIVER-DRIERS
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CRMA Tours McCray Plant

Tangent bender which forms wrap-around panels for reach-in refrigerators and stainless steel trim for ends is observed by (l. to r.) H. E. Cooper, McCray; S. D. Vander Weg, Tyler Refrigeration Corp.; Julius Brinkoeter, Friedrich Refrigerators; R. D. Jacobs, The Warren Co.; Julius Rainwater, Warren; and C. V. Hill, C. V. Hill & Co.

Cooling coil production requires special skills to produce coils for various types and sizes of fixtures. Here operator solders return bends in connection tubes to the end of a finned tube assembly, for edification of J. E. Little, McCray; A. B. Biddle, Hussmann Refrigerator Co.; E. N. Northey, Herrick Refrigerator Co.; Les Hickox, Tyler Refrigeration Corp.; W. T. McCall, McCall Corp.; William Fogel, Fogel Refrigerator Co.; J. E. Ahrens, C. Schmidt Co.; G. H. Mayhew, Tyler Refrigeration Corp.

Welding jig movable by the operator permits fast, flexible operations in assembly line welding. Looking on here are Jack Bohrman, Federal Refrigerator Co.; Eldon Barker, Percival Refrigeration Co.; H. G. Bradford, Warren Co.; Robert Erickson, Percival; R. L. Greene, Tyler Refrigeration Corp.; and H. W. Ziebell, McCray.

Sealing process to prevent moisture penetration and thus provide longer years of satisfactory operation, is done on the assembly line. Note racks holding materials and components. L. to r. Eldon Barker, Percival Co.; H. G. Bradford, Warren Co.; Jack Bohrman, Federal Refrigerator Co.; R. L. Greene, Tyler Refrigeration Corp.; H. W. Ziebell, McCray.

Unique plant tour program of the CRMA permits competitors to see all stages of McCray plant operations. Group here views final stages on separate assembly line for island freezer case. L. to r. are: H. M. Beckwith, Herrick Refrigerator Co.; R. L. Tyler, Jr., Tyler Refrigeration Corp.; R. Cart, Percival Co.; R. L. Johnson, Puffer-Hubbard Refrigerator Co.; Phil Robins, Fogel Refrigerator Co.; M. K. Ballard, Sherer-Gillett Co.

Compressor rack assembly for a complete field installation is finished at the plant. G. K. Bently of McCray describes some of the assembly details to F. Smith (behind Bently), C. V. Hill & Co.; J. R. Caulk, Jr., Hussmann Refrigerator Co.; E. B. Ahrens, C. Schmidt Co.; and J. H. Coolidge, Sherer-Gillett Co.

Compressor rack with unusual valve and receiver assembly (top) is studied by J. S. Twish, Sherer-Gillett Co.; W. B. McMillan, Hussmann Refrigerator Co.; and Karl Weber, Weber Showcase & Fixture Co.

Feature of McCray production planning is stacking and racking of components for a particular line at the point of assembly. Group here watches liner installation in a meat display case. L. to r. G. W. Mathis, McCray; W. B. McMillan, Hussmann; H. N. Corbin, C. V. Hill & Co.; Karl Weber, Weber Showcase & Fixture Co.; J. S. Twist, Sherer-Gillett Co.

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A FAMOUS NAME IN COMMERCIAL REFRIGERATION FOR OVER 50 YEARS!

As a pioneer designer and builder of commercial refrigerators, with more than 50 years of experience, Gloekler offers these important advantages:

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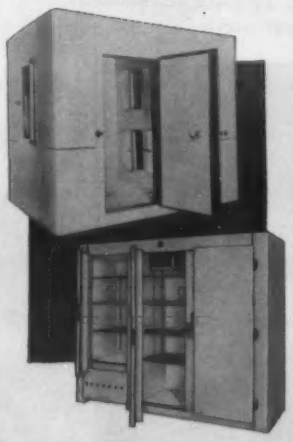

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EDWARDS Airvec Condenser Utilizes Convection Principle. Eliminates Noise, Motors, Maintenance, Structural Problems.

Heat rising from the horizontal condenser creates a chimney-like draft that continues to draw fresh air through the unit. Manufactured in 2, 3, 5, and 7½ ton basic sections, which then can be assembled in multi-sections for unlimited capacities up to hundreds of tons.

This principle eliminates: Noise, Motors, Wiring, Maintenance, Operating Problems. WRITE Airvec Dept.

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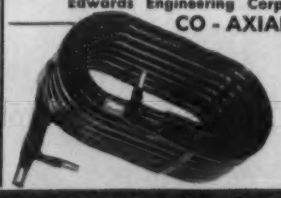

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*Installation at the T-Bowl Bowling Lanes, Hamburg Turnpike, Wayne, New Jersey

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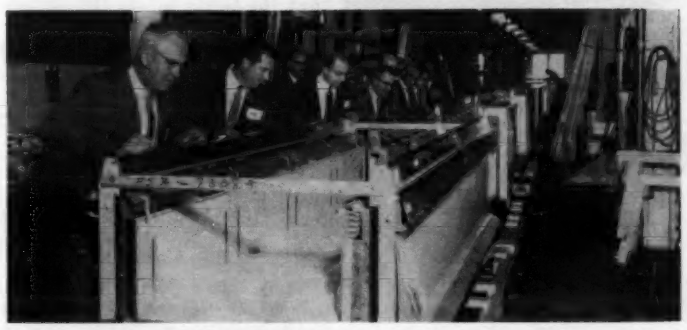
Temperatures are recorded in running test on self-contained low temperature display case. Checking the temperatures are L. C. Whitsit, Friedrich Refrigerators, and J. A. Loftin, The Warren Co.



Final assembly on island freezer display case line gets a close look from (l. to r.) Mark Allen, Weber Showcase & Fixture Co.; C. A. Butler, C. V. Hill & Co.; H. D. Snider, Piggly-Wiggly stores; H. A. Giovanni, Hussmann Refrigerator Co.; Steve Frank, Fogel Refrigerator Co.; E. B. Flowers, The Warren Co.; Harold Barnes, Tyler Refrigeration Corp.

Completion of a coil assembly for a frozen food display case gets the attention of (l. to r.) Don Voorhies, C. V. Hill & Co.; R. Johnson, Puffer-Hubbard Co.; E. A. Smith, The Warren Co.; Steve Radnick, Percival Co.; R. L. Tyler, Sr., Tyler Refrigeration Corp.; R. Rice, McCray; L. O. Bower, Sherer-Gillett Co.

Cutting and deburring operations in preparation of copper tubing for assembly is watched by Don Voorheis, C. V. Hill & Co., and R. L. Tyler, Sr., Tyler Refrigeration Corp.

Massive punch press which processes sheet metal parts engages attention of Art Perez, Tyler Refrigeration Corp.; F. A. Celler, Brewer-Titchener Corp.; J. D. Harris, The Warren Co.; R. W. Candler, McCray; Les Hickox, Tyler Refrigeration Corp.; Julius Rainwater, The Warren Co.; J. W. Krall, McCray.

Breakdown of complete refrigerated fixtures into sub-assemblies is a keynote of McCray production planning. Here CRMA members observe a fast welding operation in the building of one of the sub-assemblies. L. to r. Les Hickox, Tyler Refrigeration Corp.; Julius Rainwater, The Warren Co.; J. W. Krall, McCray; Art Perez, Tyler; F. A. Celler, Brewer-Titchener Corp.; J. D. Harris, The Warren Co.; R. W. Candler, McCray.

Plant Tour--

(Concluded from Page 23, Col. 5)

will show up in the monthly tabulation of production records and wage rates.

Check Rates and Don't Defend Bad One

Whenever a rate is seriously questioned, a detailed check should be made on the rate, with the individual who protested on hand.

Don't defend a rate that obviously is bad.

Don't set a limit on what any individual can earn—if a man can make 150% of his rate, give him a pat on the back.

For better cost control, these suggestions were made:

Be sure that any variance in standard costs of materials or labor is tagged for the right model or product involved in the variance account, so that it will show up and be questioned at the end of each month.

Control over the number of parts made in the plant, such as in the sheet metal shear department, is by production control and by check points throughout the assembly area.

When a new tool is required, weigh the costs against the savings. The time required for amortization is a matter of judgment based on experience.

On handling "specials" that do not go through the regular production run, the McCray management team recommended:

Go as far as is necessary—if the customer will pay for it.

Don't push "specials" into production until complete cost data has been assembled.

Every modification should be covered by a drawing—even if it is only a quick, rough sketch. The model shop however, should not be involved with specials.

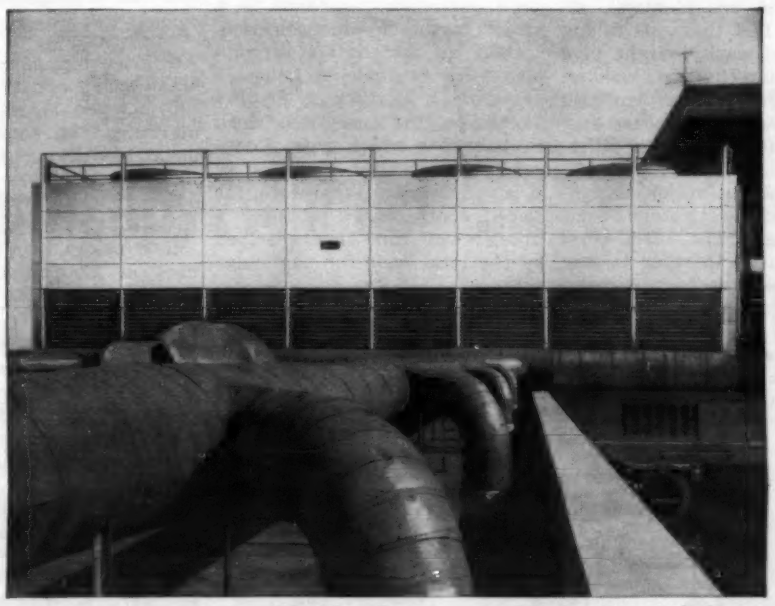
Specials go through the plant with marked up or "footnote" drawings.

Labor cost on specials is on the day work rate plus a premium.

One question was raised about the use of 440-volt current for refrigerated fixtures, a problem encountered not often, but apparently with more frequency recently, in the field.

It is a practice that should be discouraged, engineers present said, particularly if a defrost heater is involved. A defrost heater will take a lot of current, and if not properly grounded, might give a highly dangerous electrical shock.

It was pointed out that there have been instances in which 440-volt current has been used with a transformer which provides 227-volt current to the defrost heater, and 115-volt current to blower motors in refrigerated fixtures.



This Binks cooling tower, atop the Palmer House, is the heart of a newly augmented air conditioning system for 1735 guest rooms, dining and shopping facilities.

at the Palmer House in Chicago...

air conditioning water costs cut 96% by Binks cooling tower

"Our Binks cooling tower has done a great job for us," reports Chief Engineer John F. Edelhofer of the Palmer House Hotel. "Since June of 1956 our records show air conditioning water costs are only 4% of what they would have been under our old 'one-pass' system. In terms of volume, we are saving almost 7700 gallons per minute of operation. The tower should pay for itself in five years."

Cooling tower features

This tower is one of Binks 2-K vertical induced draft series. It cools and recirculates 8000 gallons per minute. Water enters at 95°F and leaves at 85°F. Four 12' diameter aluminum alloy fans assure scientifically balanced air-to-water ratio for high cooling efficiency under all climatic conditions. All panels and framework in the 72' by 42' tower are heavily galvanized and coated to insure minimum maintenance.

A complete line

Whether it is for air conditioning or the cooling of manufacturing process fluids, there is a Binks cooling tower of the correct capacity and type for every job.

Send for complete data

Ask your Binks branch office for a copy of Bulletin 333 and Bulletin 477-A or write direct to the address below. Binks engineers will be glad to answer your questions and help you solve your cooling problems. There's no obligation.

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TECHNICAL CENTER

By Frank J. Versagi, Technical Editor

Copper Tubing (3)

Among some in the field there is a tendency to talk about "dead soft," "quarter-hard," "half hard," "three-quarter hard," and "full hard." However, one engineer snorts that, for practical purposes, "copper is either hard or soft; the in-between tempers are not significant to the serviceman."

Coiled tube, both water and refrigeration tube, is always soft. Type M, which is only supplied in hard temper, is not supplied in coils, but in straight lengths only. Straight lengths of types K and L can be obtained in either hard or soft temper.

Recommended working pressures for hard and soft tube in a given size are identical, although the fact that soft tubing can be bent easily might give the impression that it is weaker. In a later section on working techniques we will discuss specific applications of the different tempers.

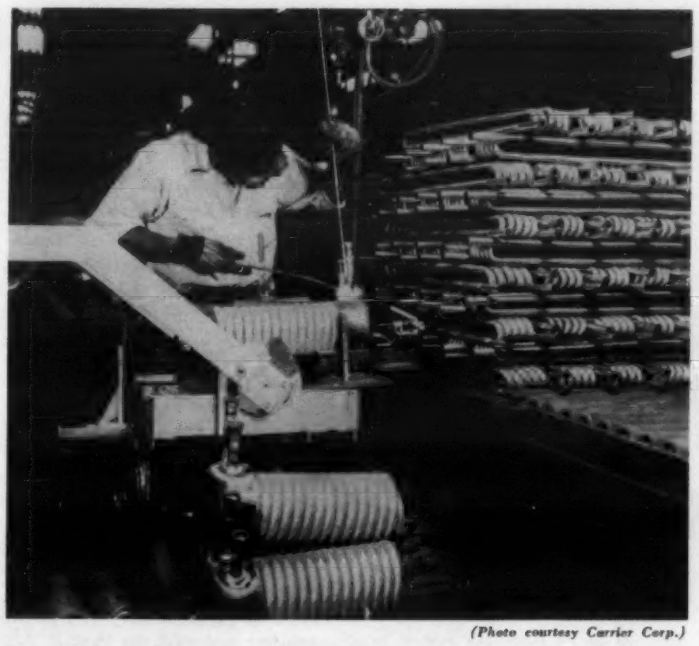
One remaining major classification of copper tube is "commercial tube." The term commercial is used to refer to any copper tube made to a customer's specifications, rather than to standard specifications. Copper tube for evaporators, condensers, heating coils, prefabricated radiant heating coils, integrated connecting tubing in manufactured items and capillary tube—all these may be commercial tube.

In most cases, commercial tube has a thinner wall than standard sizes and is less expensive, in spite of the fact that more operations are involved in its production. In such cases, the manufacturer's engineering staff usually assumes the responsibility that the custom-sized tube will perform its function adequately, although some industrial code sections do apply to manufactured items.

Copper is also available in iron pipe sizes (IPS). In this form, it is called copper pipe rather than tube, and it can be threaded or brazed. Because of its weight and expense, copper pipe is used chiefly where copper's corrosion resistance is a major factor in pipe selection.

Once an installation is complete—for example, a house is plumbed—it is difficult just by looking at the completed work to determine which type of copper tube was used, K, L, or M. It is not unknown, therefore, for some contractors to use a thinner wall tube than specified by the local code for particular uses.

A major step in overcoming this weakness has been taken by the copper tube manufacturers who are now color coding all standard manufactured sizes.



(Photo courtesy Carrier Corp.)

COMMERCIAL TUBING, for use in manufacturing operations may, or may not meet water tube or refrigeration tube specifications, according to design and engineering needs.

An inspector can quickly tell what type copper tube is in a job by looking at the color markings. In some cases, the usual identifying words will be in color; in others a continuous colored stripe appears on the tube.

The colors adopted by members of Copper & Brass Research Association are:

Water Tube
Type K—green
Type L—blue
Type M—red
Drainage Tube (DWV)—yellow
Refrigeration Tube—crimson
Threadless Pipe—gray

Straight lengths are actually imprinted in color. Coils, in most cases, are identified by the color of the carton. Although red for type M and crimson for refrigeration tube are similar in appearance, type M is never coiled, so that it will not be confused with the coiled refrigeration tube. In straight lengths, cleaned and dehydrated water tube for refrigeration use is identified by its being capped or plugged, whether type K, L, or M.

One more bit of terminology before going into application and installation techniques. The terms tube, tubing, pipe, and piping are now so loosely used that it is next to impossible to establish rigid definitions for them. Even official publications of the various organizations use the terms indiscriminately, but there are those who feel an effort should be made to define each term and use it correctly.

What is tube and what is pipe? At one time, the definition was a practical one: "anything that is coiled is tube; if it comes in straight lengths, it's pipe." With the advent of copper tube and stainless steel tube in straight lengths, this definition no longer holds.

A more meaningful distinction is that which defines tube as any fluid carrier which does not meet standard pipe sizes—IPS sizes like Schedule 40, 80, or 120. (IPS schedules will be reviewed later in the series.)

Thus, the difference between copper tube and copper pipe is that the latter meets IPS dimensions, while the former does not. Stainless steel tube used in food and beverage handling meets this definition since, it too, differs in dimensions from standard pipe sizes.

Many people in the mechanical trades like to restrict the terms tubing and piping to the built up system, rather than the materials.

Thus, you would use copper *tube* to connect remote condensing units with display cases. In referring to the complete system, you would refer to the copper *tubing*. Similarly, if you used iron *pipe* to lay out a grid panel for radiant heat, the completed grid would be called *piping*.

(To Be Continued)

Dynamic Air Formed

NEW YORK CITY—Dynamic Air Corp. has been formed here to function as an air conditioning repair service for dealers, it was announced recently. Located at 409 E. 176th St., The Bronx, the firm will have a staff of more than 15 servicemen and will be capable of repairing over 100 units a day, according to the announcement.

TAKE IT ON EVERY JOB!

There's a chemical genie in Thawzone that works like nothing else in the world to cure and prevent trouble in refrigeration and air conditioning systems.

It eliminates freeze-ups • destroys trouble-causing moisture • helps prevent corrosion and copper plating • scavenges out oxygen • helps keep expansion valves free of sludge and rust • You avoid call backs caused by freeze-ups after servicing.

Take Thawzone on *every* job, use it in *every* installation charged with the modern fluorine refrigerants (*Freon*®, *Genetron*®, etc.) or with methyl chloride, methylene chloride or isobutane. It's economical: ½ oz. treats a pound of refrigerant. And it's easy to use.

See your refrigeration wholesaler today for Thawzone and the free Thawzone Service Manual.

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TRACE
—the simple, fast way to pinpoint refrigerant leaks . . . a positive leak tag.

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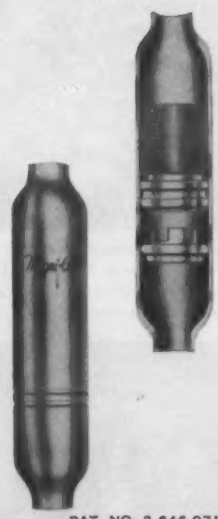

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This valve is also available without strainer, and both types are available in these six sizes: ¼" 5/16", 3/8", ½", 5/8", and ¾".

Special size inlet and outlet connections can be made to your specifications — Write us.

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WATSCO INC.
1020 EAST 15th STREET, HIALEAH, FLORIDA.

Refrigeration Problems
And Their Solution
(*As Written by Paul Reed*)

What Is Your Phobia?

Almost any service manager of a dealer or distributor who has as many as five or six servicemen will tell you that at least one of them habitually changes more of one certain part or accessory than any of the other men, perhaps two or three times as many.

CHANGING EXPANSION VALVES

One of the favorites is the expansion valve. Some men are inclined to blame the expansion valve for almost any lack of refrigeration condition. As a result, their job sheets show that they change a far larger number of expansion valves than the other men in the crew, who are servicing the same types of equipment.

Undoubtedly, a lot of those valves needed changing. Perhaps that man found some valves that actually needed changing, but were or would have been overlooked by some of the other men. Nevertheless, there is little doubt but that many of the valves he changed, did not need changing.

Perhaps he could have saved some of those valves by taking them off and washing them out with a little alcohol (not carbon tet) and then blowing them out well with refrigerant. This will often cure a valve that has been acting "sticky" due to some gum, wax, or sludge in it—or even a little water.

COMPRESSOR VALVES AND SEAL

Another favorite is the discharge or suction valves of the compressor. Some men seem to find more leaky discharge valves or "slow-pumpers" than any of the rest of the crew.

Again, perhaps some of the compressors that he changed really should have been changed, but would have been overlooked and left on by men who were less suspicious of compressor valves.

Seal leaks is another, but now declining "pet." Many a seal has been changed unnecessarily, simply because the compressor crankcase had a little oil on it underneath the seal. It is characteristic of some seals to "weep" a little oil; it does not always mean the seal leaks refrigerant.

The installation may have been low on charge, and the serviceman very correctly concluded that there was a leak somewhere. If, after searching carefully, he was unable to locate the leak elsewhere, it was easy for him to convince himself that it just had to be the seal, especially if that seal happened to be a "weeper," although perfectly innocent of leaking refrigerant.

Oil around the seal is undoubtedly a cause for some suspicion, but the seal should not be too quickly blamed just because the leak cannot be readily found elsewhere. (A low oil level of the compressor is frequently the cause of a temporary seal-leak. Bringing the oil up to its proper level will often prevent changing the seal.)

ADDING REFRIGERANT

Then of course, there is the man whose remedy is too apt to be to "give it a shot"—to add refrigerant. His early experience may have been with high-side float systems, which have a "balanced charge." The amount of charge in such a system (this also applies to capillary tube systems) is quite critical.

A few ounces of refrigerant undercharge and the evaporator may be only partially active, the unit runs far too much (or short cycles if controlled by a low pressure control) and refrigerator temperatures are high.

Too much refrigerant in a high-side float system, and the machine runs too much, head pressures are high, the motor labors, and the suction line frosts back.

These symptoms on some other type of system do not necessarily and in fact often do not result from these causes—undercharge or over charge. But it is easy to get into the mental habit of depending on adding refrigerant for most troubles.

If each of us will study our own experiences, we will probably find that we too are prone to do things by habit. We get into mental ruts, and it is easier to stay in a rut than it is to get out of it on the level road.

Ruts are useful sometimes, to allow us to keep going along in routine actions while releasing our conscious minds to constructive and useful thought. Then we call them skill or dexterity. But ruts are bad if they keep us from thinking independently on matters that require analysis and judgment.

There are some habitual suspicions that can well be encouraged: Is the condenser clean? Is the motor oiled? Are the belts properly adjusted? Is the head pressure too high? How is the air circulation around the condenser and the evaporator? Is the suction pressure too low in comparison with the refrigerator temperature? How is the compressor oil level? These and some similar habits of suspicion we can profitably encourage.

OUR PHOBIAS

"So" you say, "what is your phobia?" We confess that we have one. In fact, we have two that we are aware of.

(1) Throughout the years we have become habitually skeptical that the evaporator is as fully fed as it could be and should be. You will be surprised how often this is true and how often the expansion valve can be opened a little more (lower superheat adjustment) and still not cause frost-out on the suction line.

A more fully fed evaporator makes more of its surface active, and this results in less temperature difference between the evaporator and the foods, lower food temperatures and better humidity conditions.

Also, a more fully fed evaporator raises the suction pressure, increases the compressor capacity and efficiency and cuts the running time and the cost of operation.

So if you have to have a phobia, the "fully fed evaporator phobia" isn't a bad one. If you have one of the phobias cited in the earlier paragraphs, trade it in on the "fully fed evaporator phobia." You'll like it better.

(2) Our other phobia is pressure drop; and the malady seems to be getting worse. We seem to be increasingly obsessed with this thief of capacity and efficiency.

We frequently interpret evidence to mean excessive pressure drop in liquid lines, suction lines, and evaporators. Or could it be that pressure drop is more prevalent than formerly; that less care is being given to preventing it?

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HEAVY DUTY & MEDIUM JIFFY CLIPS

Also available without mounting hole for use with gun.

Made of heavier materials! Has exclusive inverted rib, that provides more strength at the bend of clip . . . and, of course, adds the benefits of famous "Snap On" feature! Send for literature.

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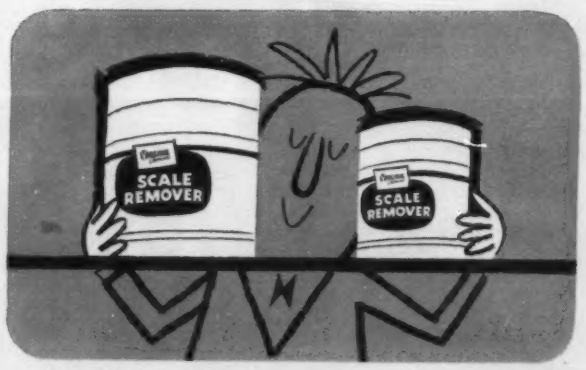
"VIRGINIA" Solid Scale Remover works rapidly, economically . . . much more safely
EVEN PROTECTS GALVANIZED EQUIPMENT

Tests reveal that "Virginia" Solid Scale Remover is much less corrosive than any other scale remover on the market. A 1-hour immersion test in inhibited "Virginia" Solid Scale Remover solution leaves galvanized strip intact (right), while a popular competitive scale remover completely erodes the surface (left).



This new, dry-acid formulation is packed in 10 and 50-lb. drums. Just empty into the water, stir into solution and it goes to work at once. Equally safe for galvanized, dipped zinc and aluminum water-cooled equipment, "Virginia" Solid Scale Remover offers the added advantage of destroying algae growth.

You will find that "Virginia" Solid Scale Remover is easy to use, too! No lifting and pouring from heavy glass bottles—no danger from splashing or pools of acid solution on the floor—no hazard from broken glass. Once you use "Virginia" Solid Scale Remover, you will discover how easy it is to get rid of scale!

For reliable, efficient water treatment, use "Virginia" chemicals—Solid and Liquid Scale Remover, Water Treatment Scale and Corrosion Inhibitor, Algae-Cides #1 and #2, and Ice Machine Cleaner. Your wholesaler stocks them. Ask about a new service company moneymaker—the "Virginia" Water Treatment Plan.

For free folder, "How to Turn Water into Money," write Refrigeration Division, VIRGINIA SMELTING CO., 192 Jefferson St., West Norfolk, Va.

ESOTOO • V-METH-L • CAN-O-GAS • VASCO-CEL • PERMAGUM • PRESSTITE TAPE KWIKWRAP • SUNISO REFRIGERATION OILS • WATER TREATMENT CHEMICALS SALES AGENT & REPACKER FOR "FREON" REFRIGERANTS

Available in Canada and many other countries

VIRGINIA® Chemicals

Air conditioning equipment* for large buildings is bought and installed by readers of the NEWS

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Marco Resumes Production--

(Concluded from Page 1, Col. 4)

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Thinking of —

- **changing territories**
- **expanding your territory**
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Check the

CLASSIFIED ADS

Your opportunity may be there.

NEW

17-CASE Cap. SELF-CONTAINED BEVERAGE COOLER $250

6 or more $235—10 or more $225

Stainless steel doors and track. Top, front and 2 sides finished in "Multikolor". All radius and ball corners. Tecumseh unit, concealed coils. No interior obstructions of unit or blower. Size—54" l. x 26" w. x 39" h.

4-BROTHERS

REFRIGERATION MFG. CO., INC.

1427 S. 8th St. Phila. 47, Pa.

A PUSH BUTTON THAT'S

EASIER TO WIRE!

Here's the standard duty Bulletin 800 push button that cuts wiring time "in half." Remove the new wrap-around cover, and the terminals are completely exposed for fast, easy wiring. The maintenance free, double break, silver alloy contacts are in the cover . . . protected against careless wiring. Made with up to 3 buttons and with pilot light, or as a selector switch—which can be changed from 3-position to 2-position, or vice versa—in a matter of seconds.

Allen-Bradley Co., 1313 S. First St., Milwaukee 4, Wis.
In Canada—Allen-Bradley Canada Ltd., Galt, Ont.

A-B QUALITY ALLEN-BRADLEY

QUALITY MOTOR CONTROL

QUIET COOLING *IS* PROFITABLE COOLING

You'll get added sales from quiet, efficient installations—the kind you make easily with compact Comfort-Aire. Four full capacity models are readily adaptable to all residential and light commercial uses.

These units are guaranteed to be of the highest quality. Meet FHA requirements. Equipped with Tecumseh compressors and extra large centrifugal blowers to deliver volumes of low velocity air for smooth, silent, satisfactory operation. But drop us a line for a copy of specifications that will prove the point. UL Approved.

Comfort-Aire

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BUSINESS NEWS PUBLISHING CO., DETROIT

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Substantial sales are now possible in numerous areas for distributors prepared to offer a complete line of ammonia refrigeration equipment. With the versatile Vilter ammonia line, you can handle practically any commercial and industrial refrigeration application in your area on an attractive competitive basis.

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Vilter ®

REFRIGERATION and AIR CONDITIONING

WRITE IN NOW FOR COMPLETE INFORMATION

THE VILTER MANUFACTURING COMPANY • Milwaukee 7, Wis.

Ammonia & Freon Compressors • Pakice & Polarflake Ice Makers • Ammonia Liquid Transfer Systems • Evaporative & Shell & Tube Condensers • Pipe Coils • Valves & Fittings

The Vilter Manufacturing Company, Dept. G2
2217 S. First St., Milwaukee 7, Wis.

Gentlemen: Please send me the checked information—

- ☐ Distributor information.
- ☐ Ammonia compressors and refrigeration equipment.
- ☐ Freon compressors.
- ☐ Air conditioning equipment.

Name.....
Title.....
Company.....
Address.....
City.....Zone....State.....

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6 or more $235—10 or more $225

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Name.....
Title.....
Company.....
Address.....
City.....Zone...State.....

Air Distribution Requirements In Year-Round Air Conditioning

By Frank D. Klein, Chief Engineer, Governair Corp.

The operational characteristics of fans will not be pursued further other than to discuss some pertinent data, as further pursuit will border on the field of fan selection, which is a subject of another part of this series.

When a fan is designed by a manufacturer, the manufacturer develops usually what he considers to be the most "average" size. To use the word "fan" here is of course to mean specifically the centrifugal type and further to mean the combination of wheel and scroll.

This "average" sized unit is put through the complete set of tests that will reveal its efficiency and performance under the conditions to which it will be adapted. From the results of such tests the manufacturer can construct not only the operating characteristics for the fan tested at other speeds and conditions, but can construct the efficiency for smaller and larger fans of the same type as long as the complete series progresses in either direction on the same geometrical pattern. This is to say that such progressions must be proportional in order to apply the test data from the tested unit.

There most definitely IS a basis for "Standard Design" of centrifugal fans (blowers). This statement can be both understood and misunderstood; however it is founded on the fact that there must exist a definite geometrical relationship between wheel and scroll.

Wheel or impeller designs are the product of the manufacturer's design, concept, experience, and many tests. In the final analysis all finalize their performance and efficiency characteristics by tests conducted in so called "standardized" scrolls or housings. Such scrolls are a mathematical derivation of the geometric relationship between impeller and housing or scroll.

This general relationship stems primarily from the impeller diameter; these in turn relate themselves to:

(1) single or double-inlet types,

(2) scroll width with respect to impeller width, and

(3) geometric derivation of the inlet ring, all of which in turn produce the logrithmic shape of the scroll itself.

By detailing the above, the point is made that with such intricacies of design progression, to develop given characteristics, installers and applicators as well as system designers tread on thin ice when varying from the application recommendations, the performance characteristics, and the rated efficiencies which the manufacturers publish to cover the scope of their product.

Manufacturers of assembled equipment very often are guilty of violating the "scope-range" of a particular fan or group of fans. Some do this through ignorance, some through gambling on the "average" application of their product in the field.

Too often, hundreds of their products may go along without question and trouble until one, or a group of non-average applications mean headaches.

The point should be understood that there is *nothing* economic whatsoever in "pushing" a particular fan beyond its accepted and rated scope-of-range, as recommended by the manufacturer.

For the moment the foregoing is sufficient. Much of what has already been said in the previous text as well as rules for selection and application on fans will follow in other parts of this series. However, it is necessary to understand the fundamentals that have been given in order to understand the Flow or Movement of Air in detail which will be taken up next.

The previous text outlined that, "air which has been conditioned to accomplish the purpose of supporting the Physiological Index of Comfort *must be in motion.*" The processes and aerodynamic principles that put it into motion, keep it in motion, control its motion, and direct its motion are the subjects which will next be under consideration.

The equipment has been discussed briefly and only to that point to where ultimate selection is required; however, before that selection can be made, the present discussion must be completed.

It has been established that the laws governing fluid flow apply also to the flow of a gas; the gas in this particular study being air.

The foregoing analogy, of course, is made between the two based on the non-compressible category.

It was also learned that the flow of fluid is governed by Differential Pressure. Some typical examples of these differential pressures as related to friction were observed in Figs. 14 and 15 which appeared in the April 28 issue.

(To Be Continued)

Distributors-Dealers Contractors

Name Brand 2 H.P. Residential Condensing Units including Coils and Controls at Bargain Prices for Immediate Inventory Clearance.

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Limited Quantity . . .
. . . Subject to Prior Sale

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Indicate Quantity Desired.

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ADVERTISEMENTS set in usual classified style. Box addresses count as five words, other address by actual word count. Please send payment with order.

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UNION MAN—Experienced in McCray, Hussmann, Frigidaire, Chrysler, York commercial machinery. Also ammonia work unlimited. Can install and service domestic power burners. Have own truck. Would like to relocate to warmer climate with reasonable pay and possible chance of year round pay. 11 years' experience. BOX A6049, Air Conditioning & Refrigeration News.

POSITIONS AVAILABLE

REFRIGERATION ENGINEER—Must have direct experience in design of package water chillers. Be able to take full charge of assembly design using standard components. Personally be capable of handling all facets of problem from inception through manufacturing, testing and field work. Send complete resume of experience and salary requirements in confidence to F. W. McKenna, Chief Engineer, KENNARD CORPORATION, 1270 N. Price Road, St. Louis 14, Mo.

SALES ENGINEER—Air conditioning-refrigeration. Several openings available for the technical graduate or equivalent who has previous experience in the industry and who is between 25 and 32 years of age. Opportunity and interesting work. Our sales engineers call on contractors, wholesalers and manufacturers of air conditioning and refrigeration equipment regarding application of our products to all sizes of systems. Starting salary based on experience plus an incentive system after indoctrination period. All replies will be kept confidential. Send your resume under personal cover to: W. H. Krack, c/o SPORLAN VALVE CO., 7525 Sussex Ave., St. Louis 17, Mo.

EQUIPMENT FOR SALE

SURPLUS INVENTORY: 144 new hermetic compressors ⅛ to 1½ h.p. Copelametic, Servel, Tecumseh. 579 new fan motors 1/100 to ¼ h.p., Century, Fasco, G.E., Marco, Wagner. 1550 new compressor overloads, starting relays, capacitors. Priced way below OEM costs. For complete list contact Ray Richardson, REMINGTON AIR CONDITIONING, Auburn, New York, 3-7371.

NATIONALLY FAMOUS brand new hermetic motor compressor domes at closeout prices! ⅛ h.p. only $25.00. Other sizes up to 1½ h.p. at equally low prices. Also, tremendous savings on complete hermetic condensing units ranging in size from ⅛ h.p. All brand new, all guaranteed. Send for listing and prices to MANN REFRIGERATION SUPPLY CO., 440 Lafayette St., New York, N. Y. GRamercy 3-8000.

WELL KNOWN brand condensing units: Open type (New) ⅛ hp air cooled - less motor $55.00. 1½ hp. water cooled - less motor $144.00. 3 hp. water cooled - less motor $175.00. FOB Chicago, Illinois. Send for bulletins and catalog on money saving refrigeration values: WALTER W. STARR, 2832 Lincoln Ave., Chicago 13, Illinois.

NEW—5 h.p. Frigidaire Model CWO-500-21, single phase water cooled condensing units, complete with motor, in original crates. Send for quantities and low clearance price. BOX A6047, Air Conditioning & Refrigeration News.

BUSINESS OPPORTUNITIES

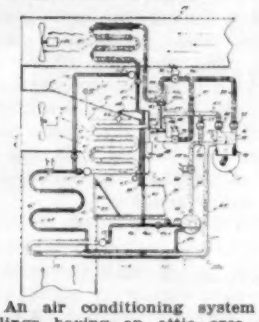
FOR SALE due to health of owner York distributorship and contracting company, over 21 years in business holding franchise on commercial air conditioning, refrigeration, residential cooling, heating, room coolers, ice makers, associate franchise freon and ammonia equipment, complete sheet metal shop, service trucks and tools, salesmen cars, leased building, over 100 franchised dealers, midwest territory, comparably small amount of capital required, long term payments, wonderful opportunity to get into going and fast growing business. BOX A6048, Air Conditioning & Refrigeration News.

FOR SALE—Well established commercial, domestic, air conditioning sales-service-repair business. Shop and display building, with nine city lots, on a main street, in fast growing suburb of thirty thousand, just fifteen minutes by freeway from heart of San Diego, California. Business established at same location, fourteen years. Ideal father-son combination. Home available next door to shop. BOX A6050, Air Conditioning & Refrigeration News.

REFRIGERATION AND Air Conditioning business for sale in Northern California: Well established, first line product franchises. Growing air conditioning business. Excellent possibilities, requires experienced management. Installation and service department, 6,000', building under lease. Present manager desires relief. Annual volume under $500,000. Good opportunity for capable executive—requires $50,000. Min. BOX 6051, Air Conditioning & Refrigeration News.

PATENTS *Week of April 8*

2,829,504. AIR CONDITIONING SYSTEM FOR DWELLINGS. Ralph C. Schlichtig, Dishman, Wash.

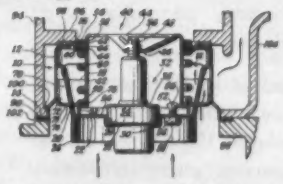


1. An air conditioning system for dwellings having an attic area over the dwelling area into which air may be drawn and having a basement area into which air may be drawn from the earth, said system comprising an air duct circuit for circulating air through the dwelling area from the basement area, a condenser in the basement area and within said air duct circuit. . . .

2,829,506. ICE BLOCK HARVESTING DEVICE. Verlos G. Sharpe, Dayton, Ohio, assignor to General Motors Corp., Detroit, Mich.

1. In combination, a refrigerator cabinet having a chamber therein, a refrigerating system associated with said cabinet including an evaporator for cooling said chamber to a temperature below 32° F., a unitary freezing device normally disposed in said chamber, a freezing device receiving and supporting element associated with said cabinet, said unitary freezing device comprising an elongated metal tray and a grid structure locked in said tray against removal therefrom. . . .

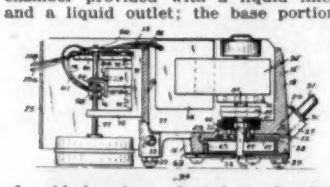
2,829,835. THERMOSTATS. Charles D. Branson, Knoxville, Tenn., assignor to Robertshaw-Fulton Controls Co., Greensburg, Pa.



1. A temperature regulator for cooling systems having main and bypass passages comprising a cup-shaped housing having an axial opening in its end wall and an apertured side wall for communication with the bypass passage, support means including at least one strap member secured at one end to said housing adjacent said end wall and projecting through said cup-shaped housing. . . .

2,829,588. CONDENSATE PUMP AND CONTROL MEANS. Frederick N. Zimmermann and Willy E. Zimmermann, Chicago, Ill., assignors to March Mfg. Co., Skokie, Ill.

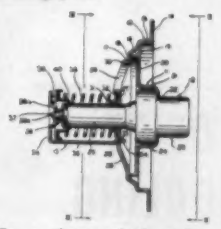
1. A portable electric condensate pump, comprising: a supporting housing having a pumping chamber and a motor chamber therein; said pumping chamber provided with a liquid inlet and a liquid outlet; the base portion



of said housing adapted to be immersed, at least in part, in a supply of liquid to be pumped; a motor supported within said motor chamber for driving a vertical impeller shaft extending downwardly therefrom and extending into said pumping chamber. . . .

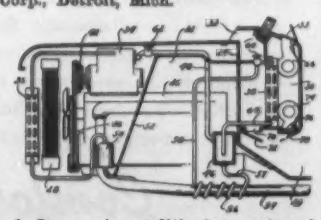
Editor's Note: Patents described here have been selected from the "Official Gazette" of the United States Patent Office. They offer only a brief summary of each invention. In some instances only the first part of the digest is presented.

2,829,834. POPPET TYPE THERMOSTAT VALVE. Harold B. Drapeau, Oak Park, and George Safranek, Chicago, Ill., assignors to The Dole Valve Co., Chicago, Ill.



5. In a thermostatic valve, a valve body having a flow opening therethrough and a valve seat extending about said opening and facing in an upstream direction, abutment means supported by said body centrally of said opening, a thermal-sensitive element including a cylindrical casing and a piston extensible from said casing at a predetermined temperature range and adapted to abut said abutment means. . . .

2,829,869. REFRIGERATING APPARATUS. Lawrence A. Philipp, Detroit, Mich., assignor to American Motors Corp., Detroit, Mich.



1. In an air conditioning system for conditioning the air of a motor vehicle passenger compartment, a combined cooling and heating coil, a refrigerant condenser supplying liquid refrigerant to the inlet of said coil, means controlling the flow of refrigerant from said condenser to said coil, a refrigerant compressor delivering compressed refrigerant to said condenser, a refrigerant receiver connected to the outlet of said coil. . . .

'Hugh McDew' Struggles With Moisture Problem

MARINETTE, Wis. — Three chapters of the Refrigeration Service Engineers Society were recently entertained by the trials of "Hugh McDew" a fictional service engineer who struggles with corrosive moisture.

"Hugh" was introduced via a slide film to the Marion, Ill.; Springfield and Joplin, Mo. RSES chapters. Vance Rutledge, from Ansul Chemical Co., conducted the meetings.

Servicing Automobile Air Conditioners

(Vol. 2)

BY C. DALE MERICLE

FORD (5)

Ford Div., Ford Motor Co.
Dearborn, Mich.

Trouble Chart

Insufficient or No Cooling.

1. First make certain the thermostatic switch on the evaporator is properly set and that the evaporator is not clogged with ice because of too low a temperature setting.

2. Make sure all body openings are air tight.

3. Check adjustment and condition of compressor belts.

4. Make sure magnetic clutch on compressor is operating properly.

5. Check for air output at instrument panel openings.

A. Set blower at high speed, cooling lever for maximum cooling, heating lever (1957 systems) at off position.

B. If air output seems less than normal, check air passages and evaporator for dirt and obstructions.

C. Make certain evaporator louvers (1956) are wide open.

D. Check blower motor for proper operation.

(Normal current draw for high speed winding of blower motor is 10 amp. at 12-12.5 volts. The slow speed winding current draw is 5 amp. at 12-12.5 volts. If amperage is not to specifications, remove blower motor, determine cause, and repair or replace.)

6. If air output is normal, check right air duct valve (1956) for proper operation. Valve should be closed to outside air when temperature control lever is set for maximum cooling.

7. Check service valves and make sure both are at maximum counter-clockwise position.

8. If preceding steps do not eliminate the trouble, check sight glass for bubbles with engine running at 1,500 r.p.m. and controls set for maximum cooling.

(No bubbles indicate either a full charge or complete loss of refrigerant. To determine if there is refrigerant in system, open high pressure service valve slightly with engine running at 1,500 r.p.m. If bubbles appear in sight glass, close valve and add partial charge of refrigerant. If no bubbles appear, check system for leaks, repair, evacuate, and charge system.)

9. If there is a full charge of refrigerant but trouble still persists, check head and suction pressures with engine at 1,500 r.p.m. and controls set for maximum cooling. Front of the car should be at least 5 ft. from any wall. Pressures should correspond with those listed in section on "Operating Pressures."

A. Suction pressure below normal, head pressure normal.

This indicates a restriction between receiver and expansion valve, or between expansion valve and suction service valve. If suction pressure is a vacuum, expansion valve is probably closed tightly, perhaps due to moisture in system freezing at the valve. This can be checked by allowing system to warm up to room temperature and then starting system again. If evaporator becomes cool, expansion valve was probably frozen. System will have to be dehydrated.

Check system between receiver and suction service valve. Any portion that is cold to the touch or frosts up with pressures as above is restricting the flow of refrigerant.

In 1956 systems a defective (open) check valve between condenser and receiver allows receiver to cool off momentarily when by-pass valve opens. If receiver stays cold continuously, receiver must be replaced.

B. Suction pressure above normal, head pressure normal.

Expansion valve bulb is not making good contact with suction line, or the valve is allowing too much refrigerant to enter evaporator because of improper operation.

C. Head pressure below normal, suction pressure normal or above normal.

If the two pressures are within 30 p.s.i.g. of each other, the compressor is defective, or (on 1956 models) the by-pass valve may be defective.

Check compressor volumetric efficiency. Repair or replace compressor if needed.

On 1956 systems check by-pass valve operation. With car ignition switch on but with engine off, move temperature control lever from maximum cooling to center position several times. There should be a distinct click at the by-pass valve. (Wire to magnetic clutch should be disconnected so as not to confuse clutch operation with by-pass valve operation.)

If no click is heard, check for voltage at by-pass valve bullet connector with control lever at maximum cooling and ignition switch on. If voltage is available but valve does not click, replace by-pass valve. If there is no voltage, check electrical circuit.

If by-pass valve does click but system pressures are still not normal, replace solenoid by-pass valve.

Other System Malfunctions

Besides "Insufficient or No Cooling" complaints there may be other conditions not readily apparent in their effect on cooling that may give trouble if not corrected.

1. Head pressure above normal.

High head pressures can be caused by an overcharge of refrigerant, air in system, condenser air passages clogged, restriction between condenser inlet and receiver, or high surrounding air temperatures.

2. Poor temperature control.

If cooling is obtained only when temperature control lever is at maximum cooling position, check hot water heater valve, making sure that valve is not stuck in open position and that control cable is properly adjusted.

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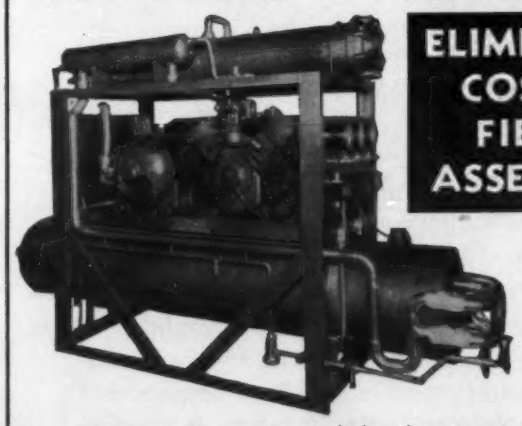

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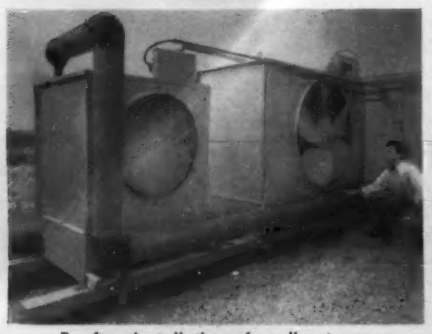
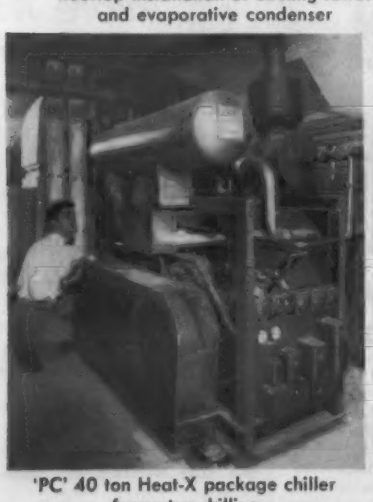
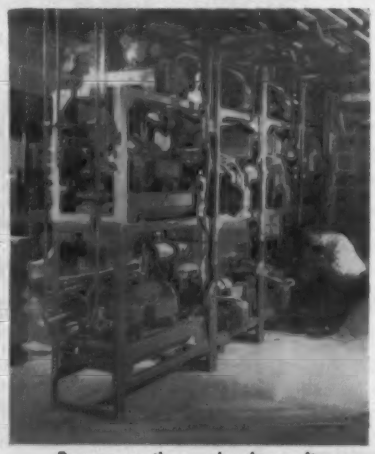


Rooftop installation of cooling tower and evaporative condenser

Low temp 'ED' electric defrost unit in walk-in cooler



'PC' 40 ton Heat-X package chiller for water chilling



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